Sontay®

... experts in field controls

2012

Catalogue

INNOVATION • QUALITY • COMMITMENT • SUPPORT

SONTAY'S MISSION

Sontay is providing the HVAC industry with quality, best of breed field peripherals, competitive pricing, unparalleled customer service and technical support.

We shall support our mission by committing ourselves to continuous improvement in all corners of the organization. Customers come first. With this, our business processes shall be tailored entirely on providing and improving a consistent, quality, customer experience.

Continuous innovation and investment in research and development, quality, our employees and customers together shall support our commitment, making us who we are.

Trevor S. Palmer
Managing Director · Sontay

Sontay®
... experts in field controls

Welcome to our 2012 Product Catalogue

... from your number one choice for all Building Measurement and Control Peripherals

Dear Customer,

I would like to take this opportunity to thank you for your continued business, support and feedback.

It has been eighteen years since Sontay published its first annual field devices catalogue in 1995. Since that time, we have seen marked changes in the variety of products our customers look to source from us, our service levels and the balance of sourced/factored products versus those we manufacture in house.

As in the past, we have worked to improve the overall layout of the catalogue which we hope will facilitate the product selection and ordering process. We have updated a number of sections to include detailed descriptions of our product and have updated the technical details in keeping.

In 2011 Sontay introduced SonNet, a wireless monitoring system positioned to replace traditional hard wired sensors, a first for the HVAC market. We are pleased with the overall interest in the product line and being recognized by the BCIA as "technical innovation of the year" for 2011. As an addition to this product range, we have introduced this year a Niagara Ax™ driver which will permit the discovery and integration of the SonNet devices into the Niagara Framework™, yet again improving the total-installed-cost case and accelerating adoption of this product within the sensor market.

Sontay has invested in a state of the art customer training facility at our facility in Edenbridge, Kent. This to has been enjoyed throughout the year by several customers requiring training on the SonNet system in addition to Metering and other customer specific curriculums. We would encourage you to request additional information and use this service as required.

We continue our theme this year, as with others, of continuous innovation and profound investment in research and development of new products. As a direct result we are pleased to make many new additions to this year's catalogue. Some of these include; a new space temperature and relative humidity product line; an enhanced air quality and CO_2 range with and without Modbus communication, and a brand new series of space temperature sensor products. We look forward to helping you with your enquiries on these products.

As a direct result of the above, Sontay has enjoyed record growth both within and outside the UK and Irish marketplaces, our best year by far!

Once again, thank you for your continued support and loyalty and as we look forward to 2012 we shall continue working to be your number one choice in field peripherals.

With regards,
Trevor S. Palmer · Managing Director
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bcia awards 2011

BCIA Award

SonNet Wireless Technology

Our SonNet wireless range of temperature and humidity sensors was named as Technical Innovation of the Year at the Building Controls Industry Association (BCIA) Awards in May 2011.

SonNet eliminates concerns over reception and reliability that are often associated with existing point-to-point wireless systems.

Judges were impressed by this system's self-diagnosis capability, and the fact that it is an easily retrofitted solution in existing buildings.

See page 39.

New Products for 2012

The Future of Temperature Sensing

SonNet®
Wireless Technology

RF-RXS · SonNet Niagara Ax™ Driver

Our award winning SonNet wireless sensor system has continued to evolve for 2012 with the addition of a network radio receiver and option card.

The new RF-RXS receiver will allow quick and seamless integration with the Tridium range of JACE controllers and opens up the system to BMS protocols such as BACnet, LonTalk and Modbus.

See page 39 for more information.

WD-CPS · New Condensation Prevention Sensor

Sontay have developed a new condensation prevention sensor, designed to provide a switched output signal to prevent the onset of condensation on chilled surfaces such as chilled beams. The temperature compensated RH is measured along with the chilled surface and the detector will calculate the dew point temperature. A current or VFC switched output will be provided on comparison of the adjustable setpoint.

More information can be found on page 69.

GS-AQ1000 · VOC Air Quality Sensor

The new GS-AQ1000 series of volatile organic compound (VOC) sensors are available in the new aesthetically pleasing space housing.

They use the proven SnO_2 sensor technology to detect a broad range of contaminants such as Ammonia and Hydrogen Sulphide and is sensitive enough to pick up low concentrations of toluene emitted from wood finishing and construction products. **Go to page 13 for more information.**

RH-1000 · New Space RH & T Sensor

Our latest space mount RH & T sensor not only looks modern and sleek but now has the added benefits of the latest RH sensing technology and user interface options such as setpoint adjustment, momentary switch and fan speed selection, along with a multi-line backlit LCD.

For more information go to page 45.

SD-821 · New Smoke Detector

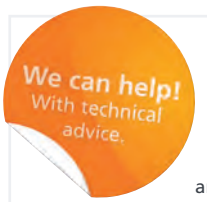
The SD-821 smoke detector uses infrared technology to detect smoke in difficult measurement conditions in air ducts, such as high velocity, and where there is dirt accumulation. A relay output of either auto or manual reset will be produced on the detection of smoke. **See page 47 for more information.**

EXTENDED WARRANTIES FOR 2012
3 year warranty on all products

As a commitment to our customers and a vow of confidence in our products we have extended our standard product warranty to 3 years. All products purchased from the beginning of 2012 onwards will be covered under this new warranty scheme.

Warranty for life on valve castings

To give you peace of mind when planning your next project we are pleased to be able to offer you a lifetime warranty on our VE plug & seat and VT terminal unit valves. There is also a 5 year or 1.5 million cycle warranty on the replaceable and serviceable cartridge. This offers you a complete sustainable option when selecting your valves.



Water & Heat Metering

Let us help you with your project ...

We have a wealth of knowledge in sizing and specifying meters and heat meter integrators and would be happy to help you work out what you need for your project. The current EU directives can be difficult to implement but we have all of the information you would need to correctly install a system according to the latest legislation.

If you have any questions about water and heat metering,
please call our technical department on 01732 861218.

Sontay More than just another Controls Supplier

We pride ourselves in offering an unrivalled range of top quality, innovative products and the highest level of customer service.

- **Dedicated Customer Services Team**
- **Comprehensive Technical Support Service**
- **Top Quality Products with a minimum 3-year guarantee**
- **Standard 'Next-day-delivery' Service on most items**
- **Extensive Product Customising Service**
- **Fully-equipped Training Centre**
- **Product Development and In-house Manufacturing**
- **International Sales and Distribution Channels**
- **Dubai Office with stocks available to support Middle East market**

What our customers say:

"Sontay's website is the first place I go to whenever I need a solution to a problem when designing BEMS, their product range is second to none and their innovative approach to new ideas means that they are always at the forefront of BMS technological advancements."
Will Delooze · Director · KINETIC SYSTEMS LTD

"I would just like to say that as a BMS systems specialist user I am always pleased to buy Sontay Products because of their reliability, competitive pricing, compatibility with numerous BMS systems and not least because of the excellent technical support that I get whenever I need it. Good work everyone. Thanks, Vic Ellis."
Vic Ellis · EVOLVE ASHDOWN CONTROL SERVICES

"I'd like to commend the Sontay team in their handling of technical enquiries and "can do" attitude in helping us provide cost effective and practical solutions to our customer's needs."
Adam Metcalf · BEng CEng MIET MCIBSE · WESTMINSTER CONTROLS

"Sontay prompt response to the orders is what I love in working with. I do not have to wait long for stock availabilities, delivery dates and that allows me to be more productive."
Joana Pereira · DOMEBUS LDA.

"I find your sales and service second to none, the delivery times I have been quoted and received have been better than expected most of the time. I've used your technical support on several occasions and found Tony to be very helpful and knowledgeable on your products."
Martin Wallis · AES CONTROLS

"Jo, Kate, Stacey and Tony are always a pleasure to speak to – nothing is too much trouble. Always a pleasure doing business, no fuss and no trouble. Also a mention for Donal, his knowledge, good humour and willingness to help on your excellent product lines makes everything seamless."
Gerard Coyne · INTELLIGENT BUILDING CONTROLS LTD

CPD Accreditation in the UK and Ireland

Sontay is now an accredited CPD trainer in the UK through CIBSE and in ROI by Engineers Ireland

To show our commitment to the building services industry Sontay now offer training which contributes to CPD (Continuing Professional Development) activity requirement.

The courses presentation can be given at your required location or at our training facility in Edenbridge, Kent. We are also able to offer training in many other HVAC subjects and would welcome your enquiries.

Our first course on Wireless Temperature Sensing Systems covers a range of topics such as:

- How wired systems are installed into buildings
- Evolution of wireless technology into our everyday lives
- Wireless sensing systems at the beginning
- Wireless technologies available and their differences
- How radio systems work
- Advantages of using wireless systems over conventional systems in HVAC

Please contact us at sales@sontay.com or speak with your Account Manager for more information.

Product Research and Development

Our dedication to innovation through research and development has not waivered through 2011. We have continued to invest in improving, updating and ensuring our products are at the top of their game.

For 2012 we have evolved other popular products from our range into our new space housing such as our relative humidity and air quality room sensors. There have also been further enhancements to the SonNet wireless range with the introduction of a new Niagara Ax™ serial driver which will permit the discovery and integration of our SonNet devices into the Niagara Framework™.

You will also see that the SD smoke detector and WD condensation detector have undergone extensive redevelopment to ensure they are offering the latest technical advancements.

SONTAY'S Sales Management Team

Our team will be pleased to hear from you whenever you require any information on our range of products and services.

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Measure the speed and volume of air and liquid with our air and water flow products. Applications include sensing of air velocity in ducts, wind speed and direction outside, monitoring of air and liquid in ducts and pipes and levels of liquids and other mediums in tanks.

Control air quality for comfort and vitality using our air quality and CO_2 sensing equipment. Use our gas leak alarm system to provide safety alarms and shutdown facilities on commercial and industrial gas installations.

Our range of controllers offer many benefits through intelligently controlling heating and ventilation systems. This facilitates not only the comfort of the occupant but also savings in energy, reducing costs and carbon footprint.

IO modules offer capability for rescaling, converting, isolating and overriding signals from BMS controllers.

Metering is a major requirement through EU legislation in new building and refurbishments. Sontay offer a full range of water, heat, gas and energy meters as well as expert technical advice for your application.

The peripherals and interfaces group is full of products that will give you greater monitoring and control in any application. From emergency switches to water leak detection to give early warning and shutdown in emergency situations to light level and occupancy sensors which can be used for security and energy savings. There are also bespoke user interface solutions for those projects that require a more specific solution.

The pressure range consists of switches and sensors for air and liquid. They offer monitoring and indication of flow in HVAC applications to ensure systems are working correctly.

Our temperature and RH sensors are renowned for their accuracy and reliability and are available for a variety of applications such as outside, ductwork, pipework and space. We have recently introduced a new housing for our interior products which will fit seamlessly into all manner of buildings. In 2011 we introduced SonNet, our wireless range to this group, offering the same accuracy and reliability but with the added cost savings of a wireless network. For 2012 we have added a network serial driver for integration with the Niagara Framework™.

A range of valves, actuators and solenoid valves for the control of water and gas. Our (VT) terminal and (VE) plug and seat valves have the added security of a lifetime warranty on the castings as well as a 5 year or 1.5 million cycle warranty on the serviceable and replaceable cartridges. We sell many actuator options to suit your application including damper and thermic actuators with raise/lower and modulating control. Our gas solenoid valves are available in manual or auto reset and now have the added option of an end switch.

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AV-DSP Single-point Air Velocity Sensor

The AV-DSP is a single-point, multi-range Air Velocity Transmitter with user selectable 0-10Vdc or 4-20mA outputs and four user selectable measurement ranges. The unit has a built-in self-test feature and the user can manually override the output to 0%, 50% or 100% of output range to aid commissioning.

FEATURES

- User selectable 0-10Vdc or 4-20mA outputs
- Built-in self-test feature
- Built-in manual override facility for 0%, 50% or 100% of output range
- Durability and resistance to chemical reagents

Part code	*Description*
AV-DSP	Air Velocity Sensor (215mm probe)
	Accessory
DPA	Duct probe adjustment flange

Data sheet: AV-DSP.pdf

SPECIFICATION

Selectable ranges:	0 to 4 m/s, 0 to 8 m/s, 0 to 16 m/s, 0 to 32 m/s	
Accuracy (±3% of range):	0 to 4 m/s, ±0.12 m/s, 0 to 8 m/s, ±0.24 m/s	
	0 to 16 m/s, ±0.48 m/s, 0 to 32 m/s, ±0.96 m/s	
Output:	4-20mA, 100Ω loop resistance min.	
	0-10Vdc into 4.7kΩ min.	
Supply (current output):	20 to 35Vdc for 500Ω loop resistance	
	12 to 30Vdc for 100Ω loop resistance	
Supply (voltage output):	17 to 34Vdc	
	14 to 26Vac supply into 4.7kΩ min.	
Max. current:	50mA	
Ambient temp. range:	–10 to +50°C	
Housing:	Material	Flame retardant ABS
	Dimensions	55 x 90mm dia.
Probe:	Material	Delrin
	Dimensions	215 x 19mm dia.
Protection:	IP65	
Weight:	280g	

AV-X Multi-point Air Velocity Probes

The AV-EP series of air velocity probes are available in lengths from 100 to 600mm and the AV-MPS series in lengths of 700 to 2000mm. They are used to ensure that recommended flow rates for public buildings and industrial plant are achieved. It is also useful to measure the carrying velocities for dust extraction, where the recommended flow rate will depend on the material being exhausted in the extract system.

Using a PA-267 or PA-699 Air Differential Pressure Sensor of an appropriate range (please refer to data sheet on Sontay's website for further information), the output of the sensor represents the velocity pressure and is defined by the following equation:

$$\text{Velocity} = \sqrt{(2 \times \text{Velocity Pressure}) / 1.2}$$

Part code	*Description*	
AV-EP100	100mm	Multi-point Probe (ABS)
AV-EP200	200mm	″
AV-EP300	300mm	″
AV-EP400	400mm	″
AV-EP500	500mm	″
AV-EP600	600mm	″

FEATURES

- Mounting plates included
- Double gasket seals the probe to the duct
- Push on connectors to suit PA-TUBE-8MM

SPECIFICATION

Probe Material:	AV-EP	PVC Flame retardant (VO)
	AV-MPS	316 Stainless steel
Connectors:	Nickel plated brass to suit 6mm ID PVC tubing	

Part code	*Description*	
AV-MPS700	700mm	Pair of Multi-point S/S Probes
AV-MPS800	800mm	″
AV-MPS1000	1000mm	″
AV-MPS1250	1250mm	″
AV-MPS1500	1500mm	″
AV-MPS1750	1750mm	″
AV-MPS2000	2000mm	″
	Accessory	
PA-TUBE-8MM	PVC tube 8mm o/d x 1,5mm wall, 30m reel	

Data sheets: AV-EP.pdf · AV-MPS.pdf

AV-W Wind Speed and Direction Sensors

The AV-WS measures wind speed providing a pulsed output and is intended for applications where external weather conditions influence the building control strategy, such as for the automatic closing of windows. A mounting arm and 'U' bolts for pole mounting are included.

COMMON SPECIFICATION

Electrical conns:	Flying lead (3m long)
Ambient range:	–20 to +70°C
Dimensions:	Height 280mm (max. arc 120mm)
Protection:	IP65

SPECIFICATION – AV-WS

Output:	1 contact closure per 1.493 metre (zero bounce)	
Min. start speed:	0.5 m/s	
Accuracy:	±2%	
Contact rating:	Power	50W max. (DC resistive)
	Voltage	100Vdc max.
	Current	1A max.
Weight:	1.46kg	

SPECIFICATION – AV-WAD

Mechanical travel:	360° endless travel
Electrical travel:	357° (±2°)
Output:	0 to 1kΩ for 0 to 357° @ 80Vdc max.
Weight:	1.56kg

Part code	*Description*
AV-WS	Wind Speed Sensor
AV-WAD	Wind Speed and Direction Sensor

Data sheet: AV-W.pdf

CN-DP Proportional Temperature Controller

This controller provides accurate and cost effective proportional control of heating and cooling loads, AHU and fan coil unit applications, and underfloor heating control.

The controller has an integral LCD display and push-buttons for easy parameter adjustment and features both frost and low-limit supply capabilities. Panel facia and DIN-rail mount case options are available.

SPECIFICATION

Display:	2 line, 8 character, 0.1°C resolution
LED indicators:	Red – heating, green – cooling
Setpoint range:	10 to 100°C in 0.5°C steps
Outputs:	Two 0-10Vdc proportional @ 10mA
Ambient range:	0 to 40°C, 0 to 80% RH non-condensing
Power supply:	24Vac/dc ±10%
Dimensions:	145 x 85 x 23mm (max)
Weight:	170g

FEATURES

- Easy installation and set up using integral keypad and LCD
- LED indication of plant status
- Panel fascia or DIN-rail mount case options
- Two 0-10Vdc modulating outputs
- Temperature display in either °C or °F
- Non-volatile memory retains parameters when power is removed
- Fully compatible with Sontay A sensors (10K3A1) and remote set-point units

Part code	*Description*
CN-DP200-DIN	Temp. Controller – DIN-rail mounting
CN-DP200-FP	Temp. Controller – front panel mounting

Data sheet: CN-DP200.pdf

EP-FS Fireman's Switches

This range of Safety Switches is for use in the event of fire or other emergency. Usually located at exits to gas plant rooms, units are key operated with a 2 or 3-position latching switch.

The EP-KG is a wall or panel-mounted Keyguard. The window is a non-hazardous clear plastic with side tabs designed to break in order to gain access to the key.

It is ideal for use in situations where a glass window would pose a hazard, i.e. food preparation areas, schools etc.

SPECIFICATION

Switch rating:	EP-FS	6A @ 240Vac
Keys:	EP-FS	2 supplied (removable in all positions)
Connections:	EP-FS	4 x 100mm flying leads
Dimensions:	EP-FS	86 x 86 x 50mm
	EP-KG	142 x 125 x 45mm
Weight:	EP-FS	200g
	EP-KG	220g
Housing:	ABS plastic	

Part code	*Description*
EP-FS1	Fireman's Switch – Red 2-position
EP-FS2	Fireman's Switch – Red 3-position
EP-FSC	Fireman's Switch – Hinged cover
EP-KG1	Keyguard – Red
EP-KGW	Keyguard – Spare window

Data sheets: EP-FS.pdf · EP-KG.pdf

EP-SW Emergency Stop

EP-KL

EP-SW10

EP-SW11

A range of Emergency Stop Buttons for manual shutdown of systems in the event of fire or other emergency.

TYPES

EP-KL
Emergency Stop Button with key lock re-set. Set of 2 keys provided.

EP-SW10
Emergency Stop Button with recessed re-set button.

EP-SW11
Emergency Stop Button with twist knob re-set.

SPECIFICATION

Switch rating:	EP-KL	15 to 415Vac, 4A
		13 to 110Vdc, 0.5A
	Others	6A @ 240Vac
Reset type:	EP-KL	Key
	EP-SW10	Push (recessed)
	EP-SW11	Twist
Dimensions:	EP-KL	65 x 65 x 90mm
	EP-SW10	73 x 80 x 50mm
	EP-SW11	65 x 65 x 90mm
Weight:	220g	

Part code	*Description*
EP-KL	Stop Button – Key lock
EP-SW10	Stop Button – Push button (recessed)
EP-SW11	Stop Button – Twist knob

Data sheets: EP-KL.pdf · EP-SW.pdf

EP-SW72 Fusible Thermal Link

The EP-SW72 is for use in gas safety circuits. Units consist of a ventilated high temperature glass filled resin case, with electrical connection terminals and a thermal fuse. When located above boilers, the fuse activates on detection of over-temperature to close down the gas system. Replacement fuses are available.

SPECIFICATION

Housing:	High temperature flame retardent glass filled resin
Entry:	M20 thread for standard conduit
Melting point:	72°C
Rating:	250Vac @ 5A
Protection:	IP20
Dimensions:	85 x 28 x 65mm
Weight:	60g

Part code	*Description*
EP-SW72	Electro-thermal Link
EP-SW72-F	Electro-thermal Link – spare fuse

Volume Price Breaks are applicable

Unit Prices (10-19 and 20+)	
EP-SW72	Please see price list

Data sheet: EP-SW72.pdf

FC-DIN Fan Speed Controllers (DIN-rail)

The FC-DIN range of DIN-rail mounting Fan Speed Controllers offer user selectable 0-10Vdc, 4-20mA input control signal compatibility for automatic control, and a optional 3-wire potentiometer input for manual control.

The FC-DIN are available in 1A, 3A and 5A single phase ratings. A fast start function is available, with user definable time, as well as user definable minimum and maximum run speeds. A simple linear input/output characteristic is selectable, and there is also a feature which allows a user to define, at 16 points, an input/output curve to suit a specific fan or application.

SPECIFICATION

Supply:	230Vac, -6%, +10%
Frequency:	7 to 64Hz
Inputs:	4-20mA (not loop powered)
	0-10Vdc
	0-10kΩ optional 3-wire potentiometer
Output:	Triac, phase angle
Mounting:	DIN-rail
Ambient Range:	–10 to +50°C, 5 to 95% RH non-condensing
Dimensions:	125 x 75 x 80mm
Weight:	350g

FEATURES

- User definable maximum and minimum speed
- Fast on normal start up
- User definable fast start time
- Downloadable configuration software

APPLICATION

Fan or pump speed control, for energy and cost savings.

Part code	*Description*
FC-DIN1	1A, 230V, 1-phase Manual Controller
FC-DIN3	3A, 230V, 1-phase Manual Controller
FC-DIN5	5A, 230V, 1-phase Manual Controller
	Accessory
FC-SP	Manual control adjustment

Data sheet: FC-DIN.pdf

FC-ERV Fan Speed Controllers

The FC-ERV can control the speed of single-phase, voltage controllable electric motors, with a 0-10Vdc or 4-20mA control signal.

Centrifugal fans, axial fans, propeller fans and centrifugal pumps are prime candidates for electronic speed control.

SPECIFICATION

Nominal supply:	230Vac, 1-phase, 50-60Hz
Control type:	Automatic from remote signal
On/off switch:	Mounted on side
Remote signal:	Two wire 4-20mA or 0-10Vdc
Starting speed:	According to signal value
Pot. action:	Not applicable
Minimum speed:	Adjustable via trim pot.
Current ratings:	FC-ERV1 - 0.1 to 1.5A, FC-ERV3 - 0.1 to 3.0A
	FC-ERV5 - 0.5 to 5.0A, FC-ERV10 - 0.5 to 10.0A
Fuse:	20mm 'FF' type
Fuse ratings:	FC-ERV1 - FF 3A, FC-ERV3 - FF 5A
	FC-ERV5 - FF 10A, FC-ERV10 - FF 16A
Mounting style:	Wall mount
Protection:	IP54
Dimensions:	88 x 195 x 115mm
Weight:	810g max.

Part code	*Description*
FC-ERV1	1A, 230V, 1-phase Controller
FC-ERV3	3A, 230V, 1-phase Controller
FC-ERV5	5A, 230V, 1-phase Controller
FC-ERV10	10A, 230V, 1-phase Controller

Data sheet: FC-ERV.pdf

FC-MTY — Manual Speed Controllers for small motors

Manual control for small, single-phase motors up to 4 amps. Suitable for wall and/or flush mounting.

Part code	Description
FC-MTY1	1A, 230V, 1-phase Controller
FC-MTY2	2A, 230V, 1-phase Controller
FC-MTY4	4A, 230V, 1-phase Controller

Data sheet: FC-MTY.pdf

SPECIFICATION

Nominal supply:	230Vac, 1-phase, 50-60Hz
Control type:	Manual via potentiometer
On/off switch:	Inbuilt with pot.
Pot. action:	Clockwise = min. to max. speed
Minimum speed:	Adjustable via trim pot
Current ratings:	FC-MTY1 - 0.1 to 1.0A, FC-MTY2 - 0.2 to 2.0A
	FC-MTY4 - 0.4 to 4.0A
Fuse:	20mm 'FF' type
Fuse ratings:	FC-MTY1 - FF 1.25A, FC-MTY2 - FF 2.5A
	FC-MTY4 - FF 5A
Mounting style:	Wall and flush mount (FC-MTY4 wall mount only)
Protection:	FC-MTY1, MTY IP44
	FC-MTY4 IP54
Dimensions:	Wall mount 82 x 82 x 65mm
Flush mount:	82 x 82 x 56mm
Weight:	360g max.

FC-STL — Manual Speed Controllers

This range of Manual Speed Controllers provide single-phase voltage control for AC motors, by varying the supplied voltage through phase-angle control.

Part code	Description
FC-STL3D	3A, type D, 1-phase Controller
FC-STL5D	5A, type D, 1-phase Controller
FC-STL10D	10A, type D, 1-phase Controller

Data sheet: FC-STL.pdf

SPECIFICATION

Nominal supply:	230Vac, 1-phase, 50-60Hz
On/off switch:	Separate to potentiometer
Starting sequence:	Full speed for 6 to 7 secs
Pot. action:	Clockwise = max. to min. speed
Minimum speed:	Adjustable via trim pot.
Current ratings:	FC-STL3D - 0.3 to 3.0A, FC-STL5D - 0.2 to 5.0A
	FC-STL10D - 0.5 to 10.0A
Fuse:	20mm 'FF' type
Fuse ratings:	FC-STL3D - FF 5A
	FC-STL5D - FF 8A
	FC-STL10D - FF 16A
Mounting style:	Wall mount
Protection:	IP54
Dimensions:	FC-STL3D 83 x 160 x 88mm
	FC-STL5D/10D 88 x 195 x 115mm
Weight:	740g max.

FS-521 — Air Flow Switch

The FS-521 Paddle Switch is intended to monitor air flow within a duct and provides a switched output on detection of either a specific air velocity or flow failure.

FEATURES

- Adjustable switching point
- Lid-mounting screws provide tamper proofing

Part code	Description
FS-521	80 x 175mm Paddle Switch

SPECIFICATION

Operating temp:	Ambient	–20 to +70°C (max.)
	Media	–20 to +120°C (max.)
Materials:	Paddle	Stainless steel
	Rod	Brass
	Enclosure	ABS flame retardant (type VO)
Switch rating:	15(8)A SPDT @ 230Vac	
Protection:	IP65	
Dimensions:	Paddle 80 x 180mm, housing 113.5 x 65 x 62mm	
Weight:	300g	

Volume Price Breaks are applicable	
Unit Prices (5+)	
FS-521	Please see price list

Data sheet: FS-521.pdf

UK Tel. +44 (0) 1732 861200 · Int. Tel. +44 (0) 1732 861225 · UK Fax +44 (0) 1732 861201 · Int. Fax +44 (0) 1732 861226
US Toll free Tel. 1877 4926398 · UAE Orders Fax 8000 440 666 · Business hours 9:00am - 17:00pm

FS-541 Liquid Flow Switches

The FS-541 series of Paddle Switches are intended to monitor liquid flow within pipes and provides a VFC output on detection of either a specific flow rate or flow failure.

They screw directly into a 1" BSPT boss.

FEATURES

- Adjustable switching point
- Stainless steel wetted parts for aggressive media (FS-541S)

SPECIFICATION

Operating temp:	–40 to +120°C (max.)	
Materials:	Paddle	Stainless steel
	Rod	Brass (S/S for FS-541S)
	Enclosure	ABS flame retardant
Switch rating:	15(8)A SPDT @ 24-250Vac, VFC	
Pipe suitability:	1" to 8"	
Protection:	IP65	
Dimensions:	Housing	113.5 x 65 x 62mm
	Paddles	28.5, 54.5, 83.5 and 161.5mm
Weight:	300g	

Part code	*Description*
FS-541	1" BSPT Flow Switch
FS-541S	1" BSPT Flow Switch (stainless steel paddle)

Volume Price Breaks are applicable

Unit Prices (5+)	
FS-541	Please see price list

Data sheet: FS-541.pdf

GL-CO Gas Leak Alarm Systems

A range of stand-alone Gas Leak Alarm Systems for use in commercial / industrial gas installations to provide safety alarm and shutdown facilities on detection of gas leakage.

FEATURES

- 1, 2 & 3 channel options
- Audio and visual alarms
- Adjustable alarm sensitivity
- Relay output for gas shut-off valves
- Relay output for remote alarms
- Auto or manual reset selectable
- Self-diagnosis fault system

SPECIFICATION

Power supply:	230Vac ±10% @ 50/60Hz or 12V ±10%	
Relay output(s):	GL-CO-RFG361	SPDT, 250V @ 5(1)A
	GL-CO-RFG65x	2 x SPDT, 250V @ 5(1)A
Materials:	Base: Nylon	Cover: ABS
Ambient:	Storage temp.	–25 to +60°C
	Operating temp.	0 to 45°C
	Relative humidity	Class F DIN 40040
Protection:	IP40	
Weight:	GL-CO-RFG361	250g
	GL-CO-RFG65x	600g

SENSOR TYPES

Natural Gas Sensor:	GL-CO-SRS150
Propane Sensor:	GL-CO-SRS250
Carbon Monoxide Sensor:	GL-CO-SRS350

Part code	*Description*
	Controllers (DIN-rail mount)
GL-CO-RFG361	1-channel, 1 x SPDT
GL-CO-RFG651	1-channel, 2 x SPDT
GL-CO-RFG652	2-channel, 2 x SPDT
GL-CO-RFG653	3-channel, 2 x SPDT
	Options
GL-CO-RFG-FMK3	Panel door mounting kit for RFG361
GL-CO-RFG-FMK6	Panel door mounting kit for RFG65x
GL-CO-RFG-WMK6	Wall mounting kit for RFG65x
	Sensors
GL-CO-SRS150	Combustibles Sensor (natural gas)
GL-CO-SRS250	Propane/LPG Sensor
GL-CO-SRS350	Carbon Monoxide Sensor

Data sheets: GL-CO-RFG361.pdf · GL-CO-RFG65x.pdf

GS-AQ Air Quality Sensors

Air Quality Transmitters are designed for use in the optimisation of the quantity of fresh air introduced into a building for ventilation purposes. The sensors are sensitive to a range of odours, smoke, solvent gases etc., and provide an output proportional to the mixed gas concentration.

This signal can be used to control fresh air fans and dampers according to the ventilation load. In installations where the primary contaminant load is human respiration, it is recommended that a CO2 transmitter is used.

FEATURES

- Detects particulates as well as gases
- Duct and space versions

SPECIFICATION

Sensor type:	Tin dioxide film		
Ambient range:	Temp.	0 to 50°C	
	RH	0 to 100%	
Power supply:	24Vac/dc ±10%		
Output:	0 to 10Vdc		
Material:	GS-AQ521	Housing	Flame retard ABS
		Probe	PVC
	GS-AQ911	Flame retard ABS	
Protection:	GS-AQ521	IP65	
	GS-AQ911	IP30	
Dimensions:	GS-AQ521	Housing	57 x 85mm dia.
		Probe	200 x 25mm
	GS-AQ911	85 x 85 x 23mm	
Weight:	GS-AQ521	300g	
	GS-AQ911	250g	

Part code	*Description*
GS-AQ521	Duct Air Quality Transmitter
GS-AQ911	Space Air Quality Transmitter

Part code	*Description*
	Accessory
DPA	Duct probe adjustment flange

Data sheets: GS-AQ521.pdf · GS-AQ911.pdf

GS-AQ1000 VOC Indoor Air Quality In The New Space Housing

NEW for 2012 Available Q1

The new Sontay GS-AQ1000 series of volatile organic compound (VOC) sensors are set in our aesthetically pleasing (1000) space housing. Based on tried and tested SnO_2 sensor technology, the new design provides a highly cost-effective answer for monitoring VOCs for indoor air quality, typically for alarm purposes.

The sensor element responds to a broad range of contaminants, such as Ammonia (NH_3) and Hydrogen Sulphide (H_2S), generated from waste materials in office and home environments.

It also has high sensitivity to low concentrations of VOCs such as toluene emitted from wood finishing and construction products.

FEATURES

- Designed to be aesthetically pleasing
- Blends into the fabric of any building
- Developed using customer feedback and involvement

Specification:

Active Outputs:	Voltage	0-10Vdc	0-5Vdc (optional)
	Current	4-20mA (3-wire)	
Optional Passive Outputs:	Thermistor	Any Sontay thermistor type*	
	Setpoint	2-wire 1kΩ to 11kΩ, linear	
	Override	VFC	
	Fan Speed	3 position	Resistive
		5 position	Resistive
Power Supply:	0-10Vdc	12 - 26Vac or 16 - 26Vdc	
	4-20mA	20 - 26Vdc only	
Ambient:	Temperature	0°C to 50°C	
	RH	0 to 95% RH, non-condensing	
Housing material:	ABS (flame retardant)		
Dimensions:	115 x 85 x 28mm		
Weight:	180g		

*** Notes:***

1. **–T** version uses a thermistor element for direct measurement of temperature. Please specify thermistor type when ordering.

2. Please see page 71 for Thermistor Types and Compatibility Chart.

Part code	*Description*
GS-AQ1000	Space Air Quality Transmitter
	Suffixes (add to part code)
-T	Direct resistive temperature output
-SP	2-wire, 1-11KΩ setpoint
-MS	Momentary switch
-FS3	3-speed fan switch

Part code	*Description*
	Suffixes (add to part code)
-FS5	5-speed fan switch
-LCD	Integral LCD display
-TR	Custom temperature output range

Data sheet: GS-AQ1000.pdf

GS-CO2 Carbon Dioxide Sensors

GS-CO2-D types

GS-CO2-W types

GS-CO2-W-LED types

This GS-CO_2 series uses a non-dispersive infrared sensor for measuring CO_2 concentrations, utilising microprocessor based electronics and a unique self-calibration algorithm to improve long-term stability and accuracy.

The sensor can be used to ensure adequate ventilation while maximizing energy savings by ventilating at the optimum level, making these ideal for all types of ventilation in commercial buildings, industrial plants, laboratories and public spaces, such as schools.

FEATURES

- Real-time detecting CO_2 levels
- Self-calibration algorithm
- User selectable outputs with Modbus option
- 3-colour 'traffic light' LED sets for CO_2 levels

SPECIFICATION

Output:	4-20mA, 0-10Vdc (jumper selectable) or ModBus		
Range:	0-2000ppm		
Modbus RS485:	19200bps, 15kV antistatic protection		
Power supply:	4-20mA	24Vdc ±10%	
	0-10Vdc	24Vac/dc ±10%	
Max. current:	67mA		
Accuracy:	±40ppm +3% of reading @ 25°C		
Stability:	<2% over sensor life		
Non-linearity:	<1% of FS		
Sensor life:	15 years, typical		
Duct air velocity:	0-450m/min (-D types only)		
LED indication (optional):	3-colour sets, indicating CO_2 levels Green - optimal, yellow - moderate, red - poor		
Ambient range:	Temp.	0 to 50°C	
	RH	0 to 95% non-condensing	
Housing material:	Flame retardant ABS		
Dimensions:	GS-CO2-D	Housing	100 x 80 x 50mm
		Probe	125.5 x 40mm
	GS-CO2-W	Housing	100 x 80 x 28mm
Protection:	GS-CO2-D	IP54	
	GS-CO2-W	IP30	
Weight:	GS-CO2-D	360g	
	GS-CO2-W	140g	

Part code	*Description*
	Wall Mounting Sensors
GS-CO2-W	CO_2 Sensor
GS-CO2-W-M	CO_2 Sensor with Modbus Output
GS-CO2-W-LED	CO_2 Sensor with LED level indication
GS-CO2-W-LED-M	CO_2 Sensor with LED indication and Modbus Output
GS-CO2-W-LED-B	CO_2 Sensor with LED indication and override button

Part code	*Description*
	Duct Mounting Sensors
GS-CO2-D	CO_2 Sensor
GS-CO2-D-M	CO_2 Sensor with Modbus Output

Data sheets: GS-CO2-D.pdf · GS-CO2-W.pdf · GS-CO2-W-LED.pdf

GS-CO2-AQ-RHT — Carbon Dioxide, Air Quality, RH & T Sensors

GS-CO2-AQ-W types

GS-CO2-AQ-D types

This new innovative one housing solution for combined CO_2, Air Quality, RH and Temp measurement, offers long term high stability and accuracy for all measured parameters.

The sensor can be used to ensure adequate ventilation while maximizing energy savings by ventilating at the optimum level, making these ideal for all types of ventilation in many applications.

FEATURES

- Up to 3 analogue outputs, CO_2, AQ, RH or Temperature
- CO_2 Self-calibration algorithm
- LCD with real time measurements
- Optional Modbus output

SPECIFICATION

Outputs:	Up to 3 analogue, 4-20mA, 0-10Vdc (jumper selectable) or ModBus				
Modbus RS485:	19200bps, 15kV antistatic protection				
Power supply:	4-20mA	24Vdc ±10%			
	0-10Vdc	24Vac/dc ±10%			
Max. current:	146mA				
Measurement ranges:	CO_2	0 to 2000ppm			
	AQ	0 to 30ppm			
	RH	0 to 100%			
	Temperature	0 to 50°C			
Accuracy @ 25°C:	CO_2	±40ppm (-D types), ±50ppm (-W types) +3% of reading			
	AQ	±10%			
	RH	< ±3%			
	Temperature	±0.5°C			
Ambient range:	Temperature	-10 to 50°C			
	RH	0 to 95% non-condensing			
Housing material:	Flame retardant ABS				
Dimensions:	Duct types	Housing	100 x 80 x 50mm		
		Probe	139 x 26mm		
	Wall types	Housing	130 x 85 x 36.5mm		
Protection:	Duct types	IP54	|	Wall types	IP30
Weight:	Duct types	360g	|	Wall types	260g

Part code	Description
	Wall Mounting Sensors
GS-CO2-AQ-RHT-W	Wall Mounting CO_2/AQ/RH or Temp Sensor, LCD Display
GS-CO2-AQ-RHT-W-M	Wall Mounting CO_2/AQ/RH or Temp Sensor, LCD Display, Modbus Output

Data sheet: GS-CO2-AQ-W.pdf

Part code	Description
	Duct Mounting Sensors
GS-CO2-AQ-RHT-D	Duct Mounting CO_2/AQ/RH or Temp Sensor, LCD Display
GS-CO2-AQ-RHT-D-M	Duct Mounting CO_2/AQ/RH or Temp Sensor, LCD Display, Modbus Output

Data sheet: GS-CO2-AQ-D.pdf

GS-CO2-RHT — Carbon Dioxide, RH & T Sensors

GS-CO2-RHT-D types

GS-CO2-T-W &
GS-CO2-RHT-W types

GS-CO2-RHT-W-LCD types

Using a non-dispersive infrared sensor for measuring CO_2 concentrations and utilising microprocessor based electronics, the unique self-calibration algorithm offers long-term stability and accuracy. They are also fitted with a RH and temperature output, and have an optional LCD with 3-colour 'traffic light' status indication.

The sensor can be used to ensure adequate ventilation while maximising energy savings by ventilating at the optimum level, making these ideal for all types of ventilation in commercial buildings, industrial plants, laboratories and public spaces, such as schools.

FEATURES

- Real-time detecting CO_2 levels
- Self-calibration algorithm
- User selectable outputs with Modbus option
- 3-colour 'traffic light' LCD status for CO_2 levels

SPECIFICATION

Output:	4-20mA, 0-10Vdc (jumper selectable) or ModBus				
Modbus RS485:	19200bps, 15kV antistatic protection				
Power supply:	4-20mA	24Vdc ±10%			
	0-10Vdc	24Vac/dc ±10%			
Max. current:	146mA				
Sensor life:	15 years (-D types), 10 years (-W types), typical				
Duct air velocity:	0-450m/min (-D types only)				
Accuracy:	CO_2	±40ppm +3% of reading @ 22°C			
	RH	< ±3% @ 25°C			
	Temp.	±0.4°C (-D types), ±0.5°C (-W types)			
Stability:	CO_2	±40ppm +3% of reading @ 22°C			
	RH	< ±3% @ 25°C			
	Temp.	±0.4°C (-D types), ±0.5°C (-W types)			
LED indication (optional):	3-colour, indicating CO2, RH & Temp. levels				
	Green – optimal (<1000ppm)				
	Yellow – moderate (1001 to 1400ppm)				
	Red – poor (>1400ppm)				
Ambient range:	Temp.	0 to 50°C			
	RH	0 to 95% non-condensing			
Housing material:	Flame retardant ABS				
Dimensions:	Duct types	Housing	100 x 80 x 50mm		
		Probe	125.5 x 40mm		
	Wall types	Housing	130 x 85 x 36.5mm		
Protection:	Duct types	IP54	|	Wall types	IP30
Weight:	Duct types	360g	|	Wall types	260g

Part code	Description
	Wall Mounting Sensors
GS-CO2-T-W	CO_2 / T Sensor
GS-CO2-RHT-W	CO_2 / RH / T Sensor
GS-CO2-RHT-W-M	CO_2 / RH / T Sensor with Modbus Output
GS-CO2-RHT-W-LCD	CO_2 / RH / T Sensor with LCD Display
GS-CO2-RHT-W-M-LCD	CO_2 / RH / T Sensor with Modbus Output and LCD Display

Data sheets: GS-CO2-RHT-W.pdf · GS-CO2-T-W.pdf

Part code	Description
	Duct Mounting Sensors
GS-CO2-RHT-D-LCD	CO_2 / RH / T Sensor with LCD display
GS-CO2-RHT-D-M-LCD	CO_2 / RH / T Sensor with Modbus Output and LCD Display

Data sheet: GS-CO2-RHT-D.pdf

GS-S Gas Sensor

The GS-S range of 4-20mA loop powered gas sensors are fitted into a robust housing, to detect the following gases:

- Nitrogen dioxide (NO_2)
- Oxygen (O_2)
- Sulphur dioxide (SO_2)

FEATURES

- 4-20mA output
- Wide supply voltage range 7.5 to 35Vdc)
- Excellent long term stability
- Accuracy unaffected by position

SPECIFICATION

Temp. range:	–30 to +50°C
RH range:	15 to 90% non-condensing
Output:	4-20mA
Supply:	7.5 to 35Vdc
Output impedance:	825Ω
Housing material:	ABS (flame retardant)
Protection:	IP65 (housing only, suitable for internal mounting only)
Dimensions:	95 x 90mm dia.
Weight:	160g

Part code	*Range*	*Resolution*
	NO_2 – Nitrogen Dioxide Sensors	
GS-S-ND10	0 to 10ppm	0.1ppm
	O_2 – Oxygen Sensor	
GS-S-OX25	15 to 25%	0.1%

Data sheets: GS-S-ND.pdf · GS-S-OX.pdf

Part code	*Range*	*Resolution*
	SO_2 – Sulphur Dioxide Sensor	
GS-S-SD20	0 to 20ppm	0.5ppm

Data sheet: GS-S-SD.pdf

Note: These units are not intended for use in life safety applications.

GS-S-CO Carbon Monoxide Sensors

NEW for 2012

GS-S-CO-LED types

GS-S-CO-W types

Sontay's new range of CO sensors offers real time detection for Carbon Monoxide measurement.

The GS-S-CO-LED range has 6 LED indicator lights which change colour based upon concentration levels. This allows for easy visual awareness of the CO levels, with either a relay or RS485 interface output.

A user selectable 0-10Vdc, 4-20mA or optional Modbus output is available with the GS-S-CO-W range. Using a robust long life electrochemical Carbon Monoxide sensor, the GS-S-CO-W is idea for many applications including underground parking, loading bays and warehouses.

FEATURES

- 5 Year sensor lifetime
- Accurate and reliable
- 3-Set LED indication (GS-S-CO-LED)
- User selectable outputs with Modbus option
- Robust housing for industrial applications (GS-S-CO-W)

SPECIFICATION

Outputs:	GS-S-CO-LED	Relay or RS485	
	GS-S-CO-W	4-20mA(3-wire)	
		0-10Vdc (jumper selectable)	
		or Modbus	
Power supply:	GS-S-CO-LED	18 to 38Vac/dc	
	GS-S-CO-W	4-20mA	24Vdc ±10%
		0-10Vdc	24Vac/dc ±10%
Consumption:		2.8W max.	
Measurement range:	GS-S-CO-LED	0 to 500ppm	
	GS-S-CO-W	0 to 100ppm/0 to 1000ppm selectable	
Accuracy:	GS-S-CO-W	<1ppm, @ 20°C ±5°C, 15 to 85%RH	
Response time:	GS-S-CO-LED	<5 minutes for 90% step change	
	GS-S-CO-W	<60 seconds	
Modbus RS485:		19200bps, 15kV antistatic protection	
Ambient range:	GS-S-CO-LED	Temp.	0 to 70°C
		RH	0 to 95% non-condensing
	GS-S-CO-W	Temp.	0 to 50°C
		RH	0 to 99% non-condensing
Housing material:		Flame retardant ABS	
Dimensions:	GS-S-CO2-LED	100 x 80 x 28mm	
	GS-S-CO-W	100 x 80 x 50mm	
	Probe	69 x 26mm dia.	
Protection:	GS-S-CO-LED	IP30	
	GS-S-CO-W	IP54	
Weight:	GS-S-CO-LED	190g	
	GS-S-CO-W	260g	

Part code	*Description*
GS-S-CO-LED	CO Detector with LED Indication and Relay Output, 0-500ppm
GS-S-CO-LED-M	CO Detector with LED Indication and RS485 Output, 0-500ppm

Data sheet: GS-S-CO-LED.pdf

Part code	*Description*
GS-S-CO-W-K	CO Sensor, 0-100ppm
GS-S-CO-W-P	CO Sensor, 0-1000ppm
GS-S-CO-W-K-M	CO Sensor, 0-100ppm with Modbus Output
GS-S-CO-W-P-M	CO Sensor, 0-1000ppm

Data sheet: GS-S-CO-W.pdf

Note: These units are not intended for use in life safety applications.

ID-CT Inverter Drives

IP20 Case Style IP66 Case Style

This range of innovative and compact Inverter Drives combines robustness, reliability and easy-to-use performance.

With 14 standard parameters to adjust in its basic form, the ID-CT range of drives could not be easier or quicker to get started with. Either a single phase (230Vac) or 3-phase (400Vac) supply can be used, and two protection ratings to suit most applications. Switched versions (sizes 2 & 3) are fitted with a dynamic braking transistor, which is used with high inertia loads that need to be stopped rapidly.

FEATURES

- Intuitive keypad control
- Modbus RTU serial communications
- Integral RFI filter
- High overload capability
- Energy saving optimisation parameter
- PI Control
- Four pre-set speeds

SPECIFICATION

Supply voltage:	Single phase		200 to 240Vac ±10%
	3-phase		380 to 480Vac ±10%
Supply frequency:	48 to 62Hz		
Output ratings:	Overload capacity		150% for 60 secs
			175% for 2 secs.
	Frequency		0 to 500Hz
Programming:	Via keypad *(PC, PDA or smartphone - contact us for more information)*		
Control method:	Voltage vector		
V/Hz ratio:	Linear		
Programmable I/O:	2 x programmable DI inputs		
	2 x user-selectable AI or DOI inputs		
	1 x programmable AO or DO output		
	1 x VFC output		
Communications:	Modbus RTU, standard		
	Profibus DP *(via gateway - contact us for more details)*		
	DeviceNet *(via gateway - contact us for more details)*		
	RS485, standard		
Ambient conditions:	Operating –10 to +50°C		
	Altitude 0 to 2000m (de-rate 1% per 100m above 1000m)		
Protection:	IP20 & IP66 options		
Dimensions:	*Frame type*		*(H x W x D)*
	IP20	1	173 x 82 x 123mm
		2	221 x 104 x 150mm
		3	261 x 131 x 175mm
	IP66	1	232 x 161 x 175mm
		2	257 x 188 x 187mm
		3	310 x 210.5 x 243mm
Conformity:	EN 61800-3:2004, EMC		
Weight:	7.4kg max.		

	Part code	Output (kW)	Current (A)	Dynamic Brake	Frame Size
	Constant Torque, 150% x 60 sec. Overload				
IP20 Case Style	1-Phase · 200-240Vac input with EMC Filter				
	ID-12037-1KB12	0.37	2.3	-	1
	ID-12075-1KB12	0.75	4.3	-	1
	ID-12150-1KB12	1.5	7	-	1
	ID-22150-1KB42	1.5	7	✓	2
	ID-22220-1KB42	2.2	10.5	✓	2
	3-Phase · 380-480Vac input with EMC Filter				
	ID-14075-3KA12	0.75	2.2	-	1
	ID-14150-3KA12	1.5	4.1	-	1
	ID-24150-3KA42	1.5	4.1	✓	2
	ID-24220-3KA42	2.2	5.8	✓	2
	ID-24400-3KA42	4	9.5	✓	2
	ID-34055-3KA42	5.5	14	✓	3
	ID-34075-3KA42	7.5	18	✓	3
IP66 Case Style	1-Phase · 200-240Vac input with EMC Filter				
	ID-12037-1KB1X	0.37	2.3	-	1
	ID-12075-1KB1X	0.75	4.3	-	1
	ID-12150-1KB1X	1.5	7	-	1
	ID-22150-1KB4X	1.5	7	✓	2
	ID-22220-1KB4X	2.2	10.5	✓	2
	1-Phase · 200-240Vac input, switched with EMC Filter				
	ID-12037-1KB1Y	0.37	2.3	-	1
	ID-12075-1KB1Y	0.75	4.3	-	1
	ID-12150-1KB1Y	1.5	7	-	1
	ID-22150-1KB4Y	1.5	7	✓	2
	ID-22220-1KB4Y	2.2	10.5	✓	2
	3-Phase, 380-480Vac input with EMC Filter				
	ID-14075-3KA1X	0.75	2.2	-	1
	ID-14150-3KA1X	1.5	4.1	-	1
	ID-24150-3KA4X	1.5	4.1	✓	2
	ID-24220-3KA4X	2.2	5.8	✓	2
	ID-24400-3KA4X	4	9.5	✓	2
	ID-34055-3KA4X	5.5	14	✓	3
	ID-34075-3KA4X	7.5	18	✓	3
	3-Phase, 380-480Vac input, switched with EMC Filter				
	ID-14075-3KA1Y	0.75	2.2	-	1
	ID-14150-3KA1Y	1.5	4.1	-	1
	ID-24150-3KA4Y	1.5	4.1	✓	2
	ID-24220-3KA4Y	2.2	5.8	✓	2
	ID-24400-3KA4Y	4	9.5	✓	2
	ID-34055-3KA4Y	5.5	14	✓	3
	ID-34075-3KA4Y	7.5	18	✓	3

Data sheet: ID-CT.pdf

ID-VT Inverter Drives (HVAC)

The ID-VT is an all new energy saving variable speed drive dedicated to the energy efficient control of pumps, fans and compressors. IP55 rated, with BACnet compatibility as standard, an integrated EMC filter to meet EN61800-3 Category 2 and compliance with EN 61000-3-12. It also includes integrated PID control and multi pump staging.

APPLICATIONS

Pumps

- Distributes work load evenly between pumps for maximum productivity
- Sleep mode saves energy by detecting low or no flow, restarting when the pressure falls to the lower set point
- Dry pump protection shuts down the drive and sets off an alarm when the pump runs without generating the required pressure
- Maintains vital water supply by lowering flow in the event of a burst pipe or leak

Fans

- Can control air handling functions with valves, fans and dampers
- Allows easy skipping of frequencies at which connected fans create resonance in the ventilation system
- Provides immediate warning of a broken belt by monitoring current versus speed, reducing fan downtime
- Fire override mode ignores all signals and alarms, keeping the drive operating for as long as possible

FEATURES

- Fast to install & commission
- Extremely low running cost
- Modbus RTU serial communications
- Integral RFI filter
- Eight pre-set speeds

SPECIFICATION

Supply voltage:	3-phase, 380 to 480Vac ±10%	
Supply frequency:	48 to 62Hz	
Output ratings:	Overload capacity	110% for 60 secs
	Frequency	Up to 120Hz
Programming:	Via keypad *(PC or PDA - contact us for more information)*	
Control method:	Voltage vector	
Programmable I/O:	3 x DI inputs	
	2 x programmable AI inputs	
	2 x programmable VFC outputs	
	2 x programmable AO outputs	
Communications:	BACnet, standard	
	Modbus RTU	
	Profibus DP *(via gateway - contact us for more details)*	
	DeviceNet *(via gateway - contact us for more details)*	
Ambient (operational):	Temp.	–10 to +40°C
	Humidity	0 95% non-condensing
	Altitude	0 to 2000m (de-rate 1% per 100m above 1000m)
Protection:	IP55	
Dimensions:	*Frame type*	*(H x W x D)*
	2	257 x 188 x 238mm
	3	310 x 210.5 x 256mm
	4	440 x 173 x 230mm
	5	540 x 235 x 270mm
	6	865 x 290 x 340mm
	7	1280 x 330 x 370mm
Conformity:	EN 61000-3-12, EMC	
Weight:	90kg max.	

Part code	*Output (kW)*	*Current (A)*	*Frame Size*
Variable Torque 110% x 60 sec. Overload			
3-Phase, 380-480Vac Input with EMC Filter			
ID-24150-3KF1N	1.5	4.1	2
ID-24220-3KF1N	2.2	5.8	2
ID-24400-3KF1N	4	9.5	2
ID-34055-3KF1N	5.5	14	3
ID-34075-3KF1N	7.5	18	3
ID-44110-3KF1N	11	25	4
ID-44150-3KF1N	15	29.5	4
ID-44185-3KF1N	18.5	39	4
ID-44220-3KF1N	22	46	4
ID-54300-3KF1N	30	61	5
ID-54370-3KF1N	37	72	5
ID-54450-3KF1N	45	90	5
ID-64550-3KF1N	55	110	6
ID-64750-3KF1N	75	150	6
ID-64900-3KF1N	90	180	6
ID-64110-3KF1N	110	202	6
ID-74132-3KF1N	132	240	7
ID-74160-3KF1N	160	302	7
ID-74200-3KF1N	200	370	7

Data sheet: ID-VT.pdf

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IO-ABM4 Analogue Override Module

Intended for applications which require independent manual override of analogue output channels from a BMS controller, as a fail-safe in the event of controller failure.

Enables actuators to be manually overridden from the panel where local access is difficult. Also useful for commissioning or temporary control of plant prior to controller installation.

FEATURES

- 4 x 0-10Vdc channels
- Hand/off/auto link selectable
- Manual adjustment of output signal
- 24Vac/dc powered
- Up to four outputs to be controlled from one input
- Direct or buffered output signals

SPECIFICATION

Input signals:	0-10Vdc
Output signals:	0-10Vdc direct or buffered
Max. output current:	20mA per channel in buffered mode
Power supply:	24Vac/dc ±15%
Max. supply current:	AC supply 260mA
	DC supply 115mA
Fused output:	24Vac @ 8A
Fuse:	8A max.
Ambient range:	–10 to +50°C
Dimensions:	104 x 106 x 70mm
Weight:	110g

Part code	*Description*
IO-ABM4	4-channel Module

Data sheet: IO-ABM4.pdf

IO-Axx Signal Conditioning

For signal rescaling, the IO-ARM can accept either a voltage or current input which can be rescaled to either a voltage or current output. The signal rescaling is achieved bz using the trimming potentiometers and jumpers links. The IO-ARM can also reverse an input signal.

The IO-AUD accepts a raise/lower relay signal and provides a 0-10Vdc output. Additional features include Hand/Off/Auto jumper for manual override, LED status indication and selectable hysteresis.

FEATURES

- Field selectable ranges
- LED Status
- Voltage to current, current to voltage conversion (IO-ARM)
- Current or voltage outputs (IO-AUD)

SPECIFICATION

Input signals:	IO-ARM	Voltage	0 to 25Vdc max.
		Current	0 to 44mA max.
	IO-AUD	Relay contact, transistor, triac, 24Vac 50/60Hz	
Input ranges:	IO-AUD	45, 60 or 240 seconds, selectable	
Output signals:	IO-ARM	Voltage	0.25 to 20Vdc max.
		Current	1 to 44mA max.
	IO-AUD	Voltage	0-10Vdc 3.3KΩ min.
		Current	4-20Ma 750Ω max.
Power supply:	IO-ARM	24Vac/dc ±10%, 200mA max.	
	IO-AUD	21.6 to 28Vdc or 24 to 35Vdc	
Ambient range:	Temperature	-10 to 50°C,	
	RH	10 to 95% RH non-condensing	
Dimensions:	IO-ARM	93 x 60 x 40mm	
	IO-AUD	96 x 58 x 30mm	
Weights:	IO-ARM	60g	
	IO-AUD	150g	

Part code	*Description*
IO-ARM	Analogue Rescaling Module
IO-AUD	R/L to Analogue Module

Data sheets: IO-ABM4.pdf · IO-AUD.pdf

IO-DIM Digital Input Multiplexers

These modules are intended for use with BMS controllers to expand their input capacity by multiplexing four or six digital signals or 4 x 24Vac/dc inputs into a single analogue controller unit. Each combination of input states corresponds to an analogue value from the IO-DIM4 and IO-DIM6 which can be decoded into four or six digital status bits.

FEATURES

- Fault finding LED indication
- Input status indication
- Input status simulation
- Expands controller input capacity
- Self calibrating output

SPECIFICATION

Inputs:	VFC, 24Vac or 24Vdc				
Outputs:	0-10Vdc into 2kΩ impedance				
	4-20mA into 500Ω max.				
Power supply:	24Vac ±15% @ 50Hz or				
	24Vdc +15% – 6%				
Current:	35mA max. voltage output mode				
	55mA max. current output mode				
LED indication:	Supply OK, supply voltage low, supply voltage high, current output (4-20mA output only)				
Ambient range:	Temp.	–10 to +50°C			
	RH	0 to 80% non-condensing			
Dimensions:	IO-DIM4	75 x 55 x 42mm			
	IO-DIM6	75 x 75 x 42mm			
Weight:	IO-DIM4	80g	IO-DIM6	100g	

Part code	*Description*
IO-DIM4	4 x VFC or 24Vac/dc inputs, selectable output
IO-DIM6	6 x VFC or 24Vac/dc inputs, selectable output

Volume Price Breaks are applicable	
Unit Price (10+)	
IO-DIM4	Please see price list

Data sheets: IO-DIM4.pdf · IO-DIM6.pdf

IO-EPC Electro-pneumatic Converters

Intended for use with BMS controllers to convert an analogue electrical control signal (either voltage or current loop) to a proportional pneumatic output. Link selection of input ranges, voltage output feedback signal, and manual override are fitted as standard.

FEATURES

- Four input ranges, link selectable
- Manual override
- Gauge indication

SPECIFICATION

Input signals:	0-5Vdc, 0-10Vdc, 0-15Vdc, 0-20mA
Feedback signal:	0-5Vdc = 0-15psig
Output pressure:	Link selectable 0-10, 0-15 or 0-20 psig
Accuracy:	< 1.5% full scale
Power supply:	24Vdc +10% –5% (< 0.2% ripple) or
	24Vac ±10% @ 50/60Hz @ 160mA max.
Air supply:	25 psig max. 18 psig min.
Pressure connections:	Brass barbs for 6.25mm (1/4" o/d, 1/8" i/d) tubing
Ambient range:	Temperature 0 to 50°C
	Humidity 5 to 95% RH non-condensing
Dimensions:	104 x 73 x 70mm
Weight:	320

Part code	*Description*
IO-EPC-G	1 Valve + Gauge Converter
IO-EPC2-G	2 Valve + Gauge Converter

Data sheets: IO-EPC-G.pdf · IO-EPC2-G.pdf

IO-IIM Input Isolation Modules

Intended for use with BMS controllers wherever the output signal requires isolation from the supply ground. The IO-IIM accepts either a current loop or voltage input. The module is powered by 24Vac and the output 0V is floating with respect to the input and supply ground.

FEATURES

- 4-20mA, 0-20mA, 0-5Vdc, or 0-10Vdc input
- Full opto-isolation between inputs and output

SPECIFICATION

Input signal:	IO-IIM-I 4-20mA (can be changed to 0-20mA)
	IO-IIM-V 0-5Vdc into 100kΩ, 0-10Vdc into 200kΩ
Output signal:	IO-IIM-I 0-10Vdc
	IO-IIM-V 0-5Vdc or 0-10Vdc
Output current:	>5mA
Supply:	24Vac +15% –10%
Typical current:	20mA sensor 100mA
	100mA sensor 200mA
Power supply to sensor:	24Vdc ±5%
Max. sensor current:	100mA
Accuracy:	±0.1%
Isolation:	DC – ±1000V peak, AC – 750Vrms
Ambient range:	–10 to +50°C
Dimensions:	75 x 102 x 65mm
Weight:	325g

Part code	*Description*
IO-IIM-I	4-20mA, Input Isolation Module
IO-IIM-V	0-5/0-10Vdc, Input Isolation Module

Data sheet: IO-IIM.pdf

IO-RM1 Single Relay Modules

A range of relays for use with BMS controllers for switching plant and isolation of input signals.

SPECIFICATION

Relay clip:	Auto eject type supplied
Ambient range:	–10 to +50°C
Dimensions:	55 x 12 x 50mm
Input signals:	IO-RM1-12DC 10Vdc | IO-RM1-24AC 24Vac
	IO-RM1-24DC 24Vdc | IO-RM1-240AC 230Vac
Output contacts:	IO-RM1-12DC 8A resistive
	IO-RM1-24DC 8A resistive
	IO-RM1-24AC 12A resistive
	IO-RM1-240AC 12A resistive
Weight:	60g

Part code	*Description*
IO-RM1-12DC	Single Relay, 12Vdc Module
IO-RM1-24DC	Single Relay, 24Vdc Module
IO-RM1-24AC	Single Relay, 24Vac Module
IO-RM1-240AC	Single Relay, 240Vac Module

Volume Price Breaks are applicable	
Unit Price (20-29 and 30+)	
IO-RM1-12DC	Please see price list
IO-RM1-24DC	
IO-RM1-24AC	
IO-RM1-240AC	

Data sheet: IO-RM1.pdf

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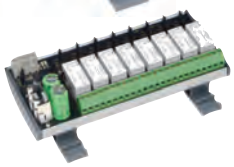
IO-RM Relay Modules



This range of relay modules is intended for use with BMS controllers to convert an analogue control output to various switching relay modes. The adjustable relay module provides individually adjustable on and off switching points.

Example applications include the control of raise/lower valves, damper actuators, pump changeover and boiler control. LEDs indicate correct operation and Hand/Off/Auto jumpers ease commissioning.

Low current draw from 0-10Vdc controller output means that the IO-RM range works successfully with most BEMS controllers.

FEATURES

- Fault finding LED indication
- Relay status LED indication
- Link selectable switching modes
- On/Off/Auto links for ease of commissioning

SPECIFICATION

Input signal:	0 to 10Vdc <1mA	
Input impedance:	Approx. 11kΩ	
Output contacts:	8A @ 230Vac (resistive load)	
Power supply:	24Vac/dc ±15% @ 50Hz	
Power consumption:	100mA max.	
Ambient range:	Temperature	0 to 40°C,
	RH	0 to 80% RH non-condensing
Dimensions:	IO-RM2	72 x 49.5 x 55mm
	IO-RM3	72 x 64 x 55mm
	IO-RM4	72 x 82 x 55mm
	IO-RM8	72 x 156 x 55mm
	IO-RMA	72 x 49.5 x 55mm
Weights:	IO-RM2	100g
	IO-RM3	140g
	IO-RM4	200g
	IO-RM8	300g
	IO-RMA	82g

Part code	*Description*
IO-RM2	2-stage Relay Module
IO-RM3	3-stage Relay Module
IO-RM4	4-stage Relay Module
IO-RM8	8-stage Relay Module
IO-RMA	Adjustable Switching Point Relay Module

Volume Price Breaks are applicable

Unit Price		
IO-RM2	*(10-19 and 20+)*	Please see price list
Unit Price		
IO-RM3	*(10+)*	Please see price list
Unit Price		
IO-RM4	*(5+)*	Please see price list

Data sheets: IO-RM2.pdf · IO-RM3.pdf · IO-RM4.pdf IO-RM8.pdf · IO-RMA.pdf

LL-CC Lighting Controllers

These Lighting Controllers are specifically designed to give savings over uncontrolled lighting whilst retaining an ease of installation and configuration. A Passive Infra-Red detector monitors occupation through body heat and a photo-sensitive device monitors light level.

The LL-CC range ensures that lighting is only switched on when the area covered is occupied and the light level is too low for normal working use. In this way lighting remains off until required.

The LL-CC-240 is a mains powered unit which switches the live feed directly to the lighting whilst the low voltage model (LL-CC-LV) is equipped with an SPDT relay to allow mains switching.

The units can be flush mounted through a false ceiling using the clip provided, or can be surface mounted using the optional back box (suffix -S to part code).

SPECIFICATION

Occupancy sensor:	Passive infra-red detector	
Field of view:	360°	
Coverage:	6 metres max.	
Light range:	10 to 2000 Lux	
Off delay timer:	10 seconds to 30 minutes	
Supply voltage:	-240	230Vac @ 50Hz
	-LV	12 to 24Vac/dc
Switching capacity:	8A incandescent, 6A fluorescent	
Electrical connections:	-240	Live, neutral & switched Live
	-LV	+/– Common, NO, NC
Temperature:	–10 to +40°C	
Protection:	IP30	
Dimensions:	76mm (dia.) x 64mm (height)	
Humidity:	90% RH non-condensing	
Material:	Flame retardant ABS, polypropylene	
Conformity:	EMC, LVD, CE marked	
Weight:	140g	

Part code	*Description*
LL-CC-240	Mains powered, ceiling mounted, Lighting Controller
LL-CC-LV	Low voltage, ceiling mounted, Lighting Controller
	Suffix (add to part code)
-S	Ceiling surface mount box

Data sheet: LL-CC.pdf

LL Light Level Sensors

This range of Light Level Sensors return a linear 0-10Vdc signal representing the lux level at the sensor element. This value is typically used in lighting strategies to optimise energy efficiency through dimming and/or disabling of lights as required.

The LL-SE-V is an External Light Level Sensor with three different output ranges which can be selected using a link on the PCB.

The enclosure is rated to IP65. The LL-SC-V (ceiling mounted) and LL-W-V (wall mounted) variants have a fixed range of 10-2000 lux and are suitable for internal applications.

FEATURES

- 0-10Vdc output
- 24Vac/dc powered

SPECIFICATION

Sensor reference:	Photo-diode
Accuracy:	±5% across range
Field of view:	60 degrees
Range:	LL-SE-V 10-2000 Lux, 10-4000 Lux, 10-10000 Lux
	LL-SC-V 10-2000 Lux
	LL-W-V 10-2000 Lux
Housing material:	LL-SE-V Polycarbonate
	LL-SC-V ABS, polypropylene
	LL-W-V ABS, polypropylene
Ambient range:	Temperature 0 to 50°C
	Humidity 0 to 100% RH non-condensing
Power supply:	24Vac/dc ±10%
Protection:	LL-SE-V IP65
	LL-SC & W IP30
Dimensions:	LL-SE-V 97mm (dia.) x 55mm (H)
	LL-SC-V 76mm (dia.) x 64mm (H)
	LL-W-V 100 x 43 x 75mm
Weight:	160g

Part code	*Description*
LL-SE-V	External, Light Level Sensor
LL-SC-V	Internal ceiling mounted, Light Level Sensor
LL-W-V	Internal wall mounted, Light Level Sensor
	Suffix (add to part code)
-S	Ceiling surface mount box

Data sheets: LL-SC.pdf · LL-SE.pdf · LL-W-V.pdf

LN-RPT FTT Network Repeater

Provides an economical physical layer repeater used to extend the maximum wire length of a LonWorks® TP/FT-10 channel and/or the number of nodes on that channel.

FEATURES

- Extends free topology networks every 500m
- Enhances network signals
- 24Vac supply

SPECIFICATION

Network speed:	78k Bit/sec
Network compatibility:	TP/FT-10
Power supply:	24Vac ±10%
Ambient range:	–10 to +60°C
Dimensions:	77 x 67 x 50mm
Weight:	300g

Part code	*Description*
LN-RPT-FTT	LonWorks FTT Network Repeater

Data sheet: LN-RPT-FTT.pdf

LN-TERM LonWorks® FTT Terminator

The LonWorks® Terminator module is suitable for terminating FTT-10 free topology and LPT-10 link powered networks. The LN-TERM-FTT is also suitable for terminating Trend IQL networks wired in a free topology configuration.

The terminator modules are designed to provide electrical termination for twisted pair channels. In a free topology TP/FT-10 segment, one LN-TERM-FTT terminator is required, and may be placed anywhere on the segment.

FEATURES

- Polarity independent connection
- Compact

Part code	*Description*
LN-TERM-FTT	FTT-10 Free Topology Terminator

Volume Price Breaks are applicable	
Unit Price (10-19 and 20+)	
LN-TERM-FTT	Please see price list

Data sheet: LN-TERM-FTT.pdf

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LS-541 Float Switch

The LS-541 is intended to monitor the liquid level in a tank or vessel and provides a switched output for local alarm, pump or valve control. The differential between switching is equivalent to approximately 15mm.

The unit mounts into 1" BSPT female boss. Access is not required to the inside of the tank.

SPECIFICATION

Mounting:	1" BSPT boss			
Media:	Non-aggressive fluids with specific gravity >0.75			
Operation:	For high or low level			
Operating temp:	Ambient –40 to +85°C, media 85°C max.			
Operating pressure:	5 bar max.			
Materials:	Float:	Acrylic	Rod:	Brass
	Bellows:	Phosphor bronze		
	Enclosure:	ABS flame retardant		
Switch rating:	15(8)A SPDT @ 230Vac, VFC			
Protection:	IP65			
Dimensions:	Housing	113.5 x 65 x 62mm		
	Float & rod	200 x 26mm dia. max.		
Weight:	300g			

Part code	*Description*
LS-541	1" BSPT Float Switch (horizontal mount)

Volume Price Breaks	
Unit Price (5+)	
LS-541	Please see price list

Data sheet: LS-541.pdf

LS-CAP Capacitance Level Sensors

These sensors are designed for level measurement in tanks or sumps providing a 4-20mA output relating to the level of fluid in the tank. The LS-CAP1 is suitable for conducting liquids such as water whilst the LS-CAP2 is designed for use with clean, low viscosity non-conducting liquids such as oil.

FEATURES

- Suitable for a wide range of media
- Easy in-situ range adjustment
- 4-20mA output
- No moving parts

SPECIFICATION

Output:	4-20mA
Supply:	20 to 38Vdc
Insertion length:	0.5 to 3m variants
Process connection:	1" BSP
Process temperature:	100°C max
Ambient temperature:	–20 to +60°C
Max. pressure:	20 bar @ 20°C
Electrode insulation:	Polypropylene
Termination housing:	ABS
Protection:	IP65
Weight:	8.24kg max.

Part code	*Description*
	Sensors for Conducting Liquids
LS-CAP1-0.5	0.5m, Probe, Sensor
LS-CAP1-1.0	1m, Probe, Sensor
LS-CAP1-1.5	1.5m, Probe, Sensor
LS-CAP1-2.0	2m, Probe, Sensor
LS-CAP1-2.5	2.5m, Probe, Sensor
LS-CAP1-3.0	3m, Probe, Sensor

Part code	*Description*
	Sensors for Non-conducting Liquids
LS-CAP2-0.5	0.5m, Probe, Sensor
LS-CAP2-1.0	1m, Probe, Sensor
LS-CAP2-1.5	1.5m, Probe, Sensor
LS-CAP2-2.0	2m, Probe, Sensor
LS-CAP2-2.5	2.5m, Probe, Sensor
LS-CAP2-3.0	3m, Probe, Sensor

Data sheet: LS-CAP.pdf

LS-FL Liquid Level Float Switches

The LS-FL series is a range of Level Switches suitable for single or multi-level applications where access is only available from the top surface or where multiple level sensing is desired from a single penetration.

Units consist of a float, which is suspended from a weighted cable. As the liquid level changes, the float follows the surface level, at the same time tilting due to its weighted restraint. Inside the float are a number of micro switches which trigger as the float tips.

SPECIFICATION

Switch rating:	6A @ 240Vac
Std. cable length:	5m
Min. switching level difference:	250mm
Max. std. switching level diff:	1200mm
Materials of construction:	Polypropylene & PVC
Min. fluid S.G.:	0.7
Ambient temperature:	0 to 55°C
Max. ext. pressure:	200kPa
Protection:	IP68
Dimensions:	170 x 155mm
Weight:	1.5kg

Part code	*Description*
LS-FL-1H	High Level, Alarm Switch
LS-FL-1L	Low Level, Alarm Switch
LS-FL-2H	Emptying Pump, Control Switch

Part code	*Description*
LS-FL-2L	Filling Pump, Control Switch
LS-FL-2LH	High & Low Level Alarm Switch

Data sheet: LS-FL.pdf

LS-AFS Automatic Float Switch

The LS-AFS is designed for simple reliable water level control. The float switch can be used to control a pump for either tank filling or tank emptying (a high or low level cut-out). It is easily achieved by positioning the float stops on the cord. The electrical connections are easily made inside the housing, via the terminal strip. Two M20 cable glands are provided for use with suitable conduit.

FEATURES

- Reliable
- Easy to install
- Easy to adjust
- Simple wiring

SPECIFICATION

Max. switching voltage:	250Vac	
Current rating:	Resistive	20A
	Inductive	8A
Float operating range:	Maximum	700mm
	Minimum	50mm
Material:	Housing & float	Polypropylene
	Weights: Brass | Cord: Nylon	
Ambient temp. range:	0 to 50°C	
Media temperature:	4 to 50°C	
Protection:	IP22	
Weight:	560g	

Part code	*Description*
LS-AFS	Automatic Float switch

Data sheet: LS-AFS.pdf

LS-X Compact Liquid Level Switch

A range of Level Switches designed for high and low liquid level detection in tanks and vessels. The LS-S types are for side mounting, type 1 switches fit from the inside of the tank and tighten on to a back nut whilst the type 2 switches mount from the outside into a tapered boss. The LS-TM is an easy to install Top Mounting Level Switch, and has a reversible float so that it can be used for either high or low level alarms. The float is suspended from a 5 metre PVC cable with a polyethylene weight and is fully submersible and adjustable.

FEATURES

- Low cost solution
- Easy to install
- Reliable switching

SPECIFICATION

Switch rating:	LS-SN	230Vac/200Vdc @ 0.5A max.
	LS-SS	300Vac/350Vdc @1A max.
	LS-TM	240Vac/200Vdc @ 0.5A max.
Contact (LS-TM):	N/O, reversible to N/C	
Material:	LS-SN	Polypropylene
	LS-SS	Stainless steel 316
	LS-TM	Cable PVC (5 meters)
		Float Nylon
		Weight Polypropylene
Tank fixing:	LS-SN1 & SS1	M16 back nut
	LS-SN2	½" NPT
	LS-SS2	½" PF
	LS-TM	1¼" BSP
Operating range:	LS-SN & LS-TM	–20 to +80°C
	LS-SS	-20 to +120°C
Dimensions:	115 x 65mm	
Weight:	280g max.	

Part code	*Description*
	Polypropylene Float Switches
LS-SN1	Internal fixing to M16 back nut
LS-SN2	½" NPT external fixing
	Stainless Steel Float Switches
LS-SS1	Internal fixing to M16 back nut
LS-SS2	½" PF external fixing

Part code	*Description*
	Top Mounting Reversible Float Switch
LS-TM	Top Mounting Level Switch

Data sheets: LS-S.pdf · LS-TM.pdf

LS-MC Ultrasonic Level Transmitter

The LS-MC is an Ultrasonic Level Transmitter for measurement of liquids in tanks or sumps. The 4-20mA output represents the distance between the surface of the liquid being detected and the sensor. The LS-MC has an integral LCD display, three push buttons under the lid for security, and just eight parameters to set making it one of the simplest ultrasonic level transmitters to calibrate and use.

FEATURES

- IP67 housing
- Fast speed of response, as much as 10m per minute
- Locking nut supplied

SPECIFICATION

Measurement range:	0.3m to 8m
Output:	4-20mA
Supply:	12 to 30Vdc loop powered
Display:	Integral 4-digit LCD
Resolution:	Better than 1mm
Temperature range:	–20 to +70°C
Material:	Transducer: PVDF | Housing: Glass filled nylon
Dimensions:	205.5 x 141mm overall
Protection:	IP67
Weight:	1.25kg

Part code	*Description*
LS-MC	Ultrasonic Level Transmitter
	Accessories
LS-NUT	Additional fixing nut
LS-FK	Adaptor flange for LS-UL3 fixings

Data sheet: LS-MC.pdf

MG-G Gas Meters (with pulsed output)

Our range of Diaphragm Gas Meters use proven, reliable technology to measure the volume of gas used and then send a pulsed signal to a BMS system.

FEATURES

- Diaphragm type
- All meters include pulsed output lead

SPECIFICATION

Max. pressure:	MG-G4 to G10 500mbar
	MG-G16 to G65 200mbar
Material:	Epoxy coated steel
	Pulsed output specification
Pulse value:	MG-G4 to G10 0.01m³ per pulse
	MG-G16 to G65 0.1m³ per pulse
Max. load current:	100mA
Max. switching voltage:	24Vdc
Max. contact rating:	0.6W
Switch actuating time:	0.3s
Connection type:	4-core flying lead
Lead length:	2m
Conformity:	EEC 71/318, UNI-CIG 7987/7988 norms, OIML Regulations
Ambient temperature:	0 to 40°C
Weight:	90kg max.

Part code	*Description*	*Max flow (m³/h)*
MG-G4	1" Screwed Gas Meter	6
MG-G6	1" Screwed Gas Meter	10
MG-G10	1½" Screwed Gas Meter	16
MG-G16	1½" Screwed Gas Meter	25
MG-G25	2" Screwed Gas Meter	40

Part code	*Description*	*Max flow (m³/h)*
MG-G40	100mm Flanged Gas Meter	65
MG-G65	100mm Flanged Gas Meter	100

Data sheet: MG-G.pdf

MW Water & Heat Metering Training

Let us help you with your project...

We have a wealth of knowledge in sizing and specifying meters and heat meter integrators and would be happy to help you work out what you need for your project.

The current EU directives can be difficult to implement but we have all of the information you would need to correctly install a system according to the latest legislation.

If you have any questions about water and heat metering, please call our technical department on 01732 861218.

Training Day

Water & heat metering are an integral part of modern day building control and a requirement by EU regulations.

Ensuring that you select and install a metering system that complies with **MID and EN1434 regulations** can be complicated.

Sontay offer training days on all aspects of water and heat metering applications to help customers become better informed on this topic and therefore equipped to make decisions that will make the process simpler and cost effective.

The training can take place at our facility in Edenbridge, Kent or your chosen location within the UK.

For more details e-mail us at sales@sontay.com.

CONTACT US:

Telephone: **+44 1732 861200**

Fax: **+44 1732 861201**

For more details e-mail us at **sales@sontay.com**.

TOPICS COVERED:

- **Key background knowledge**
  - Flow measurement
  - The difference between water meters and flow meters
  - Key flow definitions (Qs, Qp, Qi)
- **Sontay water & flow meters and integrators for heat metering**
  - Installation tips for water meters
  - Sizing water and flow meters
  - Temperature sensors & pockets for heat metering
- **M-Bus Networks**
  - How to create a network
  - Software
- **Standards, directives & Statutory Instruments**
  - 2004/22/EC - MID *(Measuring Instruments Directive)*
  - EN 1434 - Standard for heat meters
  - SI 2006 No. 1268

An Introduction to Flow Parts for Metering

Sontay offer flow parts for two distinct applications

Flow parts for water
denoted in the Sontay catalogue as 'water meters'

Are used specifically for sanitary water only, i.e. water without additives or chemical treatment, and are designed for non-continuous flow, such as domestic cold and hot water supplies.

- The total daily flow should not exceed 3 hours, over a 6 year period
- Volumetric flows higher than this can lead to increased wear in the bearings of the impellor, causing inaccuracies in reading meters
- Water meters have a narrow fluid temperature range, typically between:
  0°C to +90°C for hot water meters
  0°C to +30°C for cold water meters

Flow parts for heating
denoted in the Sontay catalogue as 'flow sensors'

Can be used with chemically treated water, and are designed for continuous or very high duty cycle flow conditions typically found in hot water heating systems.

- Flow sensors have a wider fluid temperature range than water meters, typically between 0°C to +120°C

Note: Because of these distinct differences, only flow parts designed specifically for heat metering should be used for heat metering applications. Although water meters can, in theory, be used for heat meter applications, Sontay cannot warranty water meters if used in this manner.

Definitions of the heat meter flow rate

At which the heat meter shall function, without the maximum permissible errors being exceeded:

Qs *– upper limit*	***Qp*** *– permanent*	***Qi*** *– lower limit*
(the highest rate for short periods)	(the highest rate continuously)	(the lowest rate the meter shall function)
The upper limit of the flow-rate, is the highest flow-rate at which the heat meter shall function for short periods (< 1 hour/day; < 200 hour/year), without the maximum permissible errors being exceeded.	The permanent flow-rate, is the highest flow-rate at which the heat meter shall function continuously without the maximum permissible errors being exceeded.	The lower limit of the flow-rate, is the lowest flow-rate above which the heat meter shall function without the maximum permissible errors being exceeded.

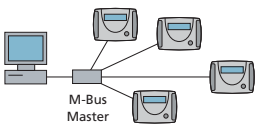
MW-M-BUS M-BUS Network

The MW-MD & MW-U range of Heat Meter Integrators, when ordered with the optional M-Bus output module and an M-Bus master, will allow up to 250 devices to be connected together on a network.

The M-Bus master module receives data from the meters, and using the MW-GMM software it is possible to read the meters and export information as a .CSV file, typically energy usage for billing purposes. M-Bus was developed specifically for meter reading applications.

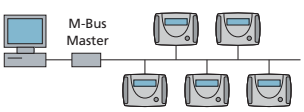
SUPPORTED TOPOLOGIES

Star
Each device is linked to a central master with an individual transmission line. The devices can transmit to the central master either sequentially or simultaneously.



Disadvantage:
- Increased requirement for cabling

Bus *(Sontay recommends BUS topology only)*
The devices are connected together with a common transmission line, with the result that at any given time only one device can transmit data.



Advantages:
- Very cost-effective
- No disruption if one of the devices fails
- Combination of star and bus
- NB – Ring topology is NOT supported.

BENEFITS INCLUDE:
- Only 2-core cable required (multi-strand is preferred)
- Polarity independent connections
- Up to 250 devices per M-Bus segment

M-BUS SEGMENTS TYPICALLY CONSIST OF:
- M-Bus 'slave' devices *(for example, heat meters)*
- An M-Bus 'master'/level convertor
  (A master unit - typically a PC with M-Bus software - polls the slaves for data, the level convertor changes M-Bus data levels to RS-232 for connection to a PC)
- M-Bus repeaters *(if required)*
- Maximum cable length per segment = 1000m
- Maximum number of M-Bus slaves per segment = 250
- M-Bus baud rate = 2400
- Cable resistance <73Ω / km
- Cable capacitance <300pF / 100m

Part code	*Description*
MW-GMM	**M-Bus Communication software**
	Single user PC licence. Other packages available on request.
MW-MASTER-32	M-Bus Master, 32 metering points
MW-MASTER-250	M-Bus Master, 250 metering points

Data sheet: MW-M-BUS.pdf

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MW-C Cold Water Meters (non-continuous flow)

SCREWED COLD WATER METERS

- Inbuilt water strainer
- Complete with couplings
- Epoxy resin coated brass to DIN 50 930 part 6
- Dry dial

Please refer to data sheet or Sontay's website for performance data, dimensions information and pressure drop tables.

SPECIFICATION

Max. fluid temperature:	30°C (safety margin 50°C)
Max. working pressure:	16 bar
Installation position:	Horizontal, dial upwards
Conformity:	EN14154
MID:	Annex B, Annex D, Annex I & MI-001

Part code	Size	Litres /pulse	Qi (l/h)	Qp (m^3/h)	Qs (m^3/h)
Cold Water Meters (Screw connections)					
MW-CS-15-A	½"	10	30	1.5	3
MW-CS-15-B	½"	100	30	1.5	3
MW-CS-20-A	¾"	10	50	2.5	5
MW-CS-20-B	¾"	100	50	2.5	5
MW-CS-25-A	1"	10	70	3.5	7
MW-CS-25-B	1"	100	70	3.5	7
MW-CS-32-A	1¼"	10	120	6	12
MW-CS-32-B	1¼"	100	120	6	12
MW-CS-40-B	1½"	100	200	10	20
MW-CS-50-B	2"	100	450	15	30

Data sheet: MW-S.pdf

FLANGED COLD WATER METERS

- Cast Iron body

Please refer to data sheet or Sontay's website for performance data, dimensions information and pressure drop tables.

SPECIFICATION

Max. fluid temperature:	30°C (safety margin 50°C)
Max. working pressure:	16 bar
Flanges:	DIN 2501 PN16
Installation position:	Horizontal / vertical, dial upwards
Conformity:	EN14154
MID:	Annex B, Annex D, Annex I & MI-001

Part code	Size	Litres /pulse	Qi (m^3/h)	Qp (m^3/h)	Qs (m^3/h)
Cold Water Meters (Flanged connections)					
MW-CF-50-B	50mm	100	0.35	15	90
MW-CF-65-B	65mm	100	0.45	25	120
MW-CF-80-B	80mm	100	0.8	40	150
MW-CF-80-C	80mm	1000	0.8	40	150
MW-CF-100-B	100mm	100	1.5	60	250
MW-CF-100-C	100mm	1000	1.5	60	250
MW-CF-125-C	125mm	1000	3	100	300
MW-CF-150-C	150mm	1000	3.5	150	350
MW-CF-200-C	200mm	1000	6.5	250	650

Data sheet: MW-F.pdf

MW-H Hot Water Meters (non-continuous flow)

SCREWED HOT WATER METERS

- Inbuilt water strainer
- Complete with couplings
- Epoxy resin coated brass to DIN 50 930 part 6
- Dry dial

Please refer to data sheet or Sontay's website for performance data, dimensions information and pressure drop tables.

SPECIFICATION

Max. fluid temperature:	90°C (safety margin 120°C)
Max. working pressure:	16 bar
Installation position:	Horizontal, dial upwards
Conformity:	EN14154
MID:	Annex B, Annex D, Annex I & MI-001

Part code	Size	Litres /pulse	Qi (l/h)	Qp (m^3/h)	Qs (m^3/h)
Hot Water Meters (Screwed connections)					
MW-HS-15-A	½"	10	30	1.5	3
MW-HS-15-B	½"	100	30	1.5	3
MW-HS-20-A	¾"	10	50	2.5	5
MW-HS-20-B	¾"	100	50	2.5	5
MW-HS-25-A	1"	10	75	3.5	7
MW-HS-25-B	1"	100	75	3.5	7
MW-HS-32-A	1¼"	10	120	6	12
MW-HS-32-B	1¼"	100	120	6	12
MW-HS-40-B	1½"	100	200	10	20

Data sheet: MW-S.pdf

FLANGED HOT WATER METERS

- Cast Iron body

Please refer to data sheet or Sontay's website for performance data, dimensions information and pressure drop tables.

SPECIFICATION

Max. fluid temperature:	90°C (safety margin 120°C)
Max. working pressure:	16 bar
Flanges:	DIN 2501 PN16
Installation position:	Horizontal / vertical, dial upwards
Conformity:	EN14154
MID:	Annex B, Annex D, Annex I & MI-001

Part code	Size	Litres /pulse	Qi (m^3/h)	Qp (m^3/h)	Qs (m^3/h)
Hot Water Meters (Flanged connections)					
MW-HF-50-B	50mm	100	0.35	15	90
MW-HF-65-B	65mm	100	0.45	25	120
MW-HF-80-B	80mm	100	0.8	40	150
MW-HF-80-C	80mm	1000	0.8	40	150
MW-HF-100-B	100mm	100	1.5	60	250
MW-HF-100-C	100mm	1000	1.5	60	250
MW-HF-125-C	125mm	1000	3	100	300
MW-HF-150-C	150mm	1000	3.5	150	350
MW-HF-200-C	200mm	1000	6.5	250	650

Data sheet: MW-F.pdf

MW — Flow Sensors (continuous flow)

Meters for measuring the volume flow in heating and cooling systems.

The MW range of flow sensors are meters especially designed for the special conditions in heating and cooling circuits.

The pulse transmission takes place via the tried and tested reed-contact and is thus, compatible with the MW-MD.

The special construction and the material design guarantee long-term measuring stability and high reliability. All of the flow sensors are designed for temperatures up to 120°C with safety up to 130°C.

FEATURES

- Reinforced bearings
- High measuring stability
- Wide load range
- Reliable in operation up to 130°C

GENERAL SPECIFICATION

Temperature range:	10 to 120°C (safety margin 130°C)	
Max. operating pressure:	PN16	
Measurement accuracy:	Class 3 (MID Annex MI-004)	
Conformity:	MID (Annex B & Annex D)	
Connections:	MW-SJ & MW-MJ types	Screwed
	MW-F types	Flanged
Materials:	Screwed	Brass
	Flanged	Cast iron
Weight:	47kg max.	

SINGLE-JET FLOW SENSORS

MW-SJ flow sensors (DN15 & 20) are very compact devices used for flows of up to Qn 2.5. They can be installed horizontally or vertically.

Part code	Size	Litres /pulse	Qi (l/h)	Qp (m^3/h)	Qs (m^3/h)
MW-SJ-15A	½"	10	12	0.6	1.2
MW-SJ-15B	½"	10	30	1.5	3
MW-SJ-20	¾"	10	50	2.5	5

Data sheet: MW-SJ.pdf

MULTI-JET FLOW SENSORS

MW-MJ flow sensors (DN20 to 40) have proven themselves for use with heavier flows. They are available for horizontal installation positions.

The MW-MJR (riser pipe) and MW-MJD (down pipe) meters have the advantage for vertical piping. Due to the low bearing load, this results in improvements in the long-term stability of measuring results.

Part code	Size	Litres /pulse	Qi (l/h)	Qp (m^3/h)	Qs (m^3/h)
	Horizontal Types				
MW-MJ-20A	¾"	10	30	1.5	3
MW-MJ-20B	¾"	10	50	2.5	5
MW-MJ-25A	1"	10	65	3.5	7
MW-MJ-25B	1"	10	90	6	12
MW-MJ-32	1¼"	10	90	6	12
MW-MJ-40	1½"	10	160	10	20
	Vertical Riser Pipe Types				
MW-MJR-20	¾"	10	30	1.5	3
MW-MJR-25A	1"	10	65	3.5	7
MW-MJR-25B	1"	10	90	6	12
MW-MJR-32	1¼"	10	90	6	12
MW-MRJ-40	1½"	10	160	10	30
	Vertical Down Pipe Types				
MW-MJD-20	¾"	10	30	1.5	3
MW-MJD-25A	1"	10	65	3.5	7
MW-MJD-25B	1"	10	90	6	12
MW-MJD-32	1¼"	10	90	6	12
MW-MJD-40	1½"	10	160	10	30

Data sheet: MW-MJx.pdf

FLANGED FLOW SENSORS

MW-F flow sensors (DN50 to 200) can be installed horizontally or vertically. They are characterised by extremely low starting flows with high measuring accuracy and excellent measuring stability – even in the most extreme of situations.

This applies for the upper, as well as the lower measuring ranges.

Part code	Size	Litres /pulse	Qi (m^3/h)	Qp (m^3/h)	Qs (m^3/h)
MW-F-50	50mm	100	0.6	15	60
MW-F-65	65mm	100	1	50	60
MW-F-80	80mm	100	3.2	40	90
MW-F-100	100mm	100	2	60	180
MW-F-125	125mm	1000	3	100	250
MW-F-150	150mm	1000	8	150	300
MW-F-200	200mm	1000	10	250	500

Data sheet: MW-FS.pdf

MW-MD Heat Meter Integrators

The MW-MD range of Heat Meter Integrators uses the latest innovative technology to calculate heat usage from heating and cooling systems. They are for use with mechanical flow parts. With its dynamic measuring cycle even the smallest energy consumptions are reliably collected. The large multifunction display permanently shows the heat consumption total, and by using the button it is possible to scroll through the display to show all data.

FEATURES

- Simple operation
- Integral wall and DIN-rail mounting bracket
- Pulsed or M-Bus output options
- Measures heating or cooling and heat/cooling

SPECIFICATION

Temp. range:	1 to 150°C	
Temp. diff:	3 to 120K	
Battery life:	6 years (optional 11 year)	
Display:	Multifunction 8-digit + characters LCD	
Output pulse:	30Vdc max. @ 20mA	
Pulse duration:	400m/s <TP <600m/s	
M-Bus Baud rate:	2400	
Sensor type:	PT500 Matched pair	
Pocket thread:	½" BSP	
Conformity:	EN1434, MID	
Ambient range:	Temperature	5 to 55°C
	RH	95% non-condensing
Conformity:	EN1434, MID Annex, I M1/E1 & Annex MI-004	
Dimension:	106 x 54 x 120mm (H x L x W)	
Protection:	IP54	
Weight:	500g	

Part code	*Description*
MW-MD	Heat Meter Integrator (build unit with following options)
	Output Module (add type to above code)
-P	Pulsed output
-M	M-Bus
	Pockets & PT500 Temp. Sensor (add type to above code)
-A	45mm, pocket sensor pair – 1.5m cable
-B	105mm, pocket sensor pair – 3m cable
-C	105mm, pocket sensor pair – 10m cable
-D	140mm, pocket sensor pair – 3m cable
-E	140mm, pocket sensor pair – 10m cable
	System Type (add type to above code)
-4	Heating system
-5	Cooling system
-6	Heat/cooling system
	Accessory
MW-BATTERY	Optional 11 year battery (only available when purchasing MW-MD, not avaiable as a seperate item)
	Replacement Items
MW-PKT-1	45mm stainless steel pockets (pair)
MW-PKT-2	105mm stainless steel pockets (pair)
MW-PKT-3	140mm stainless steel pockets (pair)

Data sheet: MW-MD.pdf

Typical order code: **MW-MD-P-B-5** ➡ Heat Meter Integrator with pulsed output, 105mm pocket sensor pair with 3m cable, for a cooling system.

The default location of the flow sensor is in the return. If the meter is to be fitted in the flow please advise at time of order.

MW-CHM Compact Heat Meters

Heat energy is calculated by using a matched pair of high accuracy sensors to measure the difference between the forward and flow temperatures. The amount of water flowing through the circuit is measured by the water meter, and the microprocessor-controlled calculator then calculates the consumed heat energy from the temperature and flow data. The large, easy-to-read display shows the energy used. Additional measurement and instrument data can be easily displayed by scanning the display loops. The integrated non-volatile E²PROM automatically stores the meter data once a day. It is possible to view the last 18 monthly values from the display.

FEATURES

- Compact design
- Simple operation
- Measures heating or cooling
- Pulsed output or M-Bus options

SPECIFICATION

Water Meter

Temperature range:	10 to 90°C	
Nominal pressure:	16 bar	
Installation:	Return	
Cable length to heat meter:	50cm	
Nominal diameter (DN):	15mm or 20mm	
Nominal flow (qp):	15mm	0.6 or 1.5m³/h
	20mm	2.5m³/h
External thread:	15mm	G¾"
	20mm	G1"

Temperature Sensors

Sensor element:	PT500			
Sensor:	Lead length:	1.5m	Diameter:	5mm
Installation:	Flow	¾" or 1" ball valve with integral pocket		

Heat Meter

Temperature range:	1 to 130°C	
Display type:	8 digit LCD	
Energy display:	MWh	
Data storage:	Non-volatile memory, once daily	
Battery life:	>6 years	
Output pulse:	Max. operating voltage	30Vdc, 20mA max
	Pulse width	400-600m/s
Conformity:	MID (Annex B & Annex D)	
Measurement accuracy:	Class 3 (MID Annex MI-004)	
Ambient temperature:	5 to 55°C	
Protection:	IP54	
Weight:	1.02kg	

Part code	*Description*
MW-CHM-1	Meter with 0.6m³/h nominal flow
MW-CHM-2	Meter with 1.5m³/h nominal flow
MW-CHM-3	Meter with 2.5m³/h nominal flow
	Output Options (add type to above code)
-A	Pulsed output
-B	M-Bus output
	Replacement Items
MW-BV-1	¾" ball valve c/w pocket
MW-BV-2	1" ball valve c/w pocket

Data sheet: MW-CHM.pdf

The default location of the flow sensor is in the return. If the meter is to be fitted in the flow please advise at time of order.

MW-U Ultrasonic Flow Sensors

Ultrasonic Heat Sensors have no moving parts which makes them almost wear free and noiseless. They measure the flow by using the transit time principle, one ultrasonic signal is launched in the flow direction and one against the flow direction. The calculator uses the latest innovative technology to calculate heat usage from heating systems. With its dynamic measuring cycle even the smallest energy consumptions are reliably collected. The large multifunction display permanently shows the heat consumption total; it is possible to scroll through the display to show all data.

FEATURES

- Simple operation
- Long life ultrasonic flow meter
- Flow meter can be mounted in any position
- Integral wall and DIN-rail mounting bracket for calculator
- Pulsed or M-Bus output options

SPECIFICATION

Nominal flow rate:	qp 0.6 to qp 60m³/h	
Max. static pressure:	Screwed	16 bar
	Flanged	25 bar
Body materials:	Brass	
Temperature range:	Heating	10 to 130°C
	Cooling	10 to 50°C
Maximum temp:	50°C for 2000 h	
Temperature diff:	3 to 120K	
Supply:	3.6V Lithium battery	
Battery life:	6 years (optional 11 year available upon request)	
Display:	Multifunction 8-digit + characters LCD	
Output pulse:	30Vdc max. @ 20mA	
Pulse duration:	400m/s <TP <600m/s	
M-Bus baud rate:	2400	
Flow sensor cable:	1.5m to electronics, 2m to calculator	
Sensor type:	PT500 Matched pair	
Sensor lead lengths:	1.5m (screwed types), 3m (flanged types)	
Sensor pockets:	45mm (screwed types), 105mm (flanged types)	
Pocket thread:	½" BSP	
Conformity:	MID (Annex B & Annex D)	
Measurement accuracy:	Class 2 (MID Annex MI-004)	
Ambient range:	Temp. 5 to 55°C, RH 95% non-condensing	
Protection:	IP54	
Weight:	22.5kg max.	

Part code	*Description*
MW-U	Heat Meter Integrator (build unit with following options)
	Output Module (add type to above code)
-P	Pulsed output
-M	M-Bus
	Flow Sensor (add type to above code)
-4	qp 0.6m³/h, G¾", (R½") screwed
-5	qp 1.5m³/h, G¾", (R½") screwed
-6	qp 2.5m³/h, G1", (R¾") screwed
-7	qp 3.5m³/h, G1¼", (R1") screwed
-8	qp 6m³/h, G1¼", (R1") screwed
-9	qp 10m³/h, G2", (R1½") screwed
-E	qp 10m³/h, DN40 flanged
-F	qp 15m³/h, DN50 flanged
-G	qp 25m³/h, DN65 flanged
-H	qp 40m³/h, DN80 flanged
-J	qp 60m³/h, DN100 flanged
	System Type (add type to above code)
-4	Heating system
-5	Cooling system

Data sheet: MW-U.pdf

Typical order code: **MW-U-M-E-4** ➡ Heat Meter Integrator with M-Bus output, qp 10m³/h flow meter (DN40 flanged) and for heating system.

The default location of the flow sensor is in the return. If the meter is to be fitted in the flow please advise at time of order.

OC Occupancy Detectors

The OC range of Passive Infra-red Detectors is for monitoring occupation through moving body heat. The detection of occupancy causes the internal SPDT relay to activate and the volt free contacts ensure compatibility with a vast array of equipment including BMS digital inputs.

The OC-PIRC-LV can be flush mounted through a false ceiling using the clip provided, or can be surface mounted using the optional back box (suffix -S to part code) whilst the OC-W-LV can be fixed directly to a wall or mounted using the angled bracket supplied.

Note: Wall mounted versions can be used to switch low voltage loads only. Ceiling units are mains rated.

SPECIFICATION

Occupancy sensor:	Passive infra-red detector	
Field of view:	360°	
Coverage:	7 metres max.	
Off delay timer:	10 seconds to 30 minutes	
Supply voltage:	12 to 24Vac/dc	
Switching capacity:	6A resistive, 2A inductive	
Electrical connections:	Common, NO, NC	
Temperature:	–10 to +40°C	
Humidity:	90% RH non-condensing	
Dimensions:	OC-PIRC-LV	76mm (dia.) x 64mm (H)
	OC-W-LV	100 x 43 x 75mm
Material:	Flame retardant ABS, polypropylene	
Conformity:	EMC, LVD, CE marked	
Weight:	140g	

Part code	*Description*
OC-PIRC-LV	Ceiling Mounted Detector (low voltage)
OC-W-LV	Wall Mounted Detector (low voltage)
	Suffix (add to part code)
-S	Ceiling surface mount box (OC-PIRC-LV only)

Data sheets: OC-PIRC.pdf · OC-W-LV.pdf

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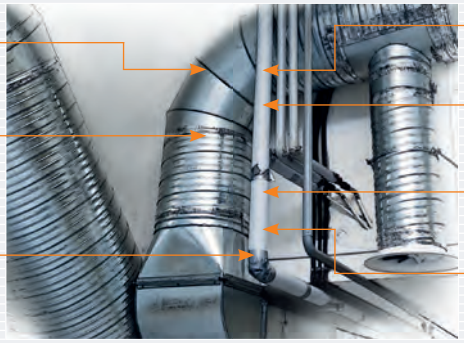
An Introduction to Pressure

Sontay offer a wide range of pressure sensing and switching products

1. Use a PA-604 to provide indication of fan status in air conditioning systems.
2. Use the PA-267 or PA-699 to measure differential pressure in HVAC applications.
3. Measure static pressure in water, air and steam with PL-528 or PL-691 for lower ranges.



4. The PL-630 and PL-FD113 DP switch can be used for flow monitoring and proving in water, air and steam.
5. The PL-625 is used to maintain system pressure and can be used for liquids or gases.
6. For high accuracy and close control applications use the PL-692 to measure differential pressure.
7. Monitor for flow failure and flow proving with the PL-PSA adjustable pressure switch.

PA-604 Air DP Switches

Switch with mounting bracket (supplied)

Optional backplate (PA-ADPT)

The PA-604 range of high sensitivity Air Differential Pressure Switches are for low differential pressure switch applications. Suitable for use in air-conditioning systems to provide an indication of fan status and 'filter dirty' conditions.

The switching setpoint is adjusted by means of a calibrated knob, mounted under the main cover to avoid tampering. Units are supplied complete with a duct fixing kit and mounting bracket.

FEATURES

- Close switching differential
- Four ranges to cover all applications
- Mounting bracket and duct fixing kit included
- Snap-fit cover
- IP65 housing option

Part code	Description	Differential
	IP54 Switch Housing	
PA-604-90	20 to 300Pa Switch	12 to 20Pa
PA-604-91	50 to 500Pa Switch	22 to 32Pa
PA-604-92	100 to 1000Pa Switch	40 to 55Pa
PA-604-94	500 to 2000Pa Switch	70 to 120Pa

Volume Price Breaks are applicable	
Unit Price (10-19 and 20+)	
PA-604-90	Please see price list
PA-604-91	
PA-604-92	
PA-604-94	

Part code	Description	Differential
	IP65 Switch Housing (including switch)	
PA-604-90-IP65	20 to 300Pa Unit	12 to 20Pa
PA-604-91-IP65	50 to 500Pa Unit	22 to 32Pa
PA-604-92-IP65	100 to 1000Pa Unit	40 to 55Pa
PA-604-94-IP65	500 to 2000Pa Unit	70 to 120Pa
	Accessories	
DFK	Duct fixing kit	
TEE	Tee piece air pressure (pack of 10)	
PA-TUBE-8MM	PVC tube 8mm o/d x 1.5mm wall, 30m reel	
PA-ADPT	Adaptor bracket for PA-930 fixings	

Data sheet: PA-604.pdf

Note: A mounting bracket and duct fixing kit (DFK - consisting of 2m of 5mm i/d plastic tubing, 2 x pitot tubes and 4 x fixing screws) is supplied with the switch.

SPECIFICATION

Operating ranges:	*Type:*	*Adjustment range:*
	PA-604-90	20 to 300Pa
	PA-604-91	50 to 500Pa
	PA-604-92	100 to 1000Pa
	PA-604-94	500 to 2000Pa
Max. operating pressure:	5000Pa	
Pressure connections:	6mm i/d push-on tubing, P1 = Hi, P2 = Lo	
Electrical rating:	5A (0.8) @ 250Vac	
Connections:	Spade terminals	
Dimensions:	81mm dia x 58mm	
Housing material:	Plastic moulding	
Fixing:	Metal mounting bracket	
Protection:	IP54 or IP65	
Ambient range:	–30 to +85°C	
Weight:	115g	

The IP65 option DP switch is connected (in the factory) to custom made nipples mounted in the housing. This eliminates awkward piping on-site and makes the product much easier to fit, and reduces installation time.

PA-267 Air DP Sensors

These sensors are designed for differential pressure measurements of air and other neutral gases. The unit is especially suited for measurement and control in HVAC applications. The measurement cell uses an advanced design capacitive element to ensure excellent linearity and stability.

FEATURES

- Two accuracy levels to suit different applications
- Available in ranges as low as 0-25Pa
- Integral LCD option
- IP65 housing with 20mm cable entry gland
- Duct fixing kit included

Part code	*Description*
PA-267-25	0 to 25Pa, 4-20mA Transmitter
PA-267-50	0 to 50Pa, 4-20mA Transmitter
PA-267-100	0 to 100Pa, 4-20mA Transmitter
PA-267-300	0 to 300Pa, 4-20mA Transmitter
PA-267-500	0 to 500Pa, 4-20mA Transmitter
PA-267-1000	0 to 1000Pa, 4-20mA Transmitter
PA-267-1600	0 to 1600Pa, 4-20mA Transmitter
PA-267-2500	0 to 2500Pa, 4-20mA Transmitter
PA-267-3000	0 to 3000Pa, 4-20mA Transmitter
	Suffixes (add to above part code)
-V	0-10V voltage output
-B	Bi-directional
-AH	High accuracy
-LCD *	Integral LCD display

SPECIFICATION

Accuracies:	*Standard*	*High*	
	Overall	±1.00% fsd	±0.40% fsd
	Linearity	±0.98% fsd	±0.33% fsd
	Hysteresis	±0.20% fsd	±0.20% fsd
	Repeatability	±0.10% fsd	±0.10% fsd
	Total	±1.28% fsd	±0.63% fsd
Thermal effect:	±0.06% per °C		
Over pressure:	10 psi (68 kPa)		
Pressure connections:	Push fit for 6mm i/d tube		
Output:	Current	4-20mA, load: 100 to 800Ω	
	Voltage	0-10Vdc (o/p impedance <100kΩ)	
Power supply:	Current Min.	9Vdc + (0.02 x load resistance)	
	Max.	30Vdc + (0.004 x load resistance)	
	Voltage	9-30Vac or 12-40Vdc	
Diaphragm:	Stainless steel 304SS		
Housing:	Glass-filled polycarbonate to UL94V-0		
Protection:	IP65		
Operating temp:	–18 to +65°C		
Dimensions:	158 x 80 x 60mm max.		
Weight:	340g		

Part code	*Description*
	Accessories
DFK	Duct fixing kit
TEE	Tee piece air pressure (pack of 10)
PA-TUBE-8MM	PVC tube 8mm o/d x 1.5mm wall, 30m reel
PA-267-CAL *	Calibration certificate

Data sheet: PA-267.pdf

Note: * These options must be specified at time of sensor order. They are built to order and not available ex-stock.

- A duct fixing kit (DFK) is supplied with the sensor, consisting of 2m of 5mm i/d plastic tubing, 2 x pitot tubes and 4 x fixing screws.

PA-699 Multi-range Air DP Sensors

Sontay's range of field selectable Multi-range Differential Pressure Transmitters, incorporate a proven ceramic fulcrum lever technology for pressure measurement.

The PA-699 has up to three field selectable ranges in one unit, providing versatility for a multitude of applications.

FEATURES

- Adjustable measurement range
- IP65 housing
- Duct fixing kit included
- Compact construction

Part code	*Description*
PA-699-01	Bi-directional, 30, 50 & 100Pa, 4-20mA Multi Range
PA-699-02	0 to 30, 50 & 100Pa, 4-20mA Multi Range
PA-699-03	0 to 50, 100 & 300Pa, 4-20mA Multi Range
PA-699-04	0 to 100, 300 & 500Pa, 4-20mA Multi Range
PA-699-05	0 to 300, 500 & 1000Pa, 4-20mA Multi Range
PA-699-06	0 to 500, 1000 & 1600Pa, 4-20mA Multi Range
PA-699-07	0 to 1000, 1600, 2500Pa, 4-20mA Multi Range
PA-699-08	0 to 1600, 2500 & 5000Pa, 4-20mA Multi Range
	Suffixes (add to above part code)
-V	0-10V voltage output
-LCD	Integral LCD option

SPECIFICATION

Accuracy, total of linearity, hysteresis & repeatability (% fs):	PA-699-01 to 04 ±1.0 max.		
	Others	±0.6	
Thermal effect (typical % fs/°C):		*TC zero point*	*TC sensitivity*
	PA-699-01	±0.02	±0.03
	PA-699-02	±0.02	±0.03
	PA-699-03	±0.02	±0.02
	PA-699-04	±0.01	±0.01
	Others	±0.01	±0.01
Rupture pressure:	2 x overload at ambient temp.		
Power supply:	Current output	8 to 33Vdc	
	Voltage	13.5 to 33Vdc or 24Vac ±15%	
Diaphragm:	Silicone		
Housing:	Polycarbonate PC		
Temperature:	Medium & ambient	0 to 70°C	
Protection:	IP65		
Dimensions:	92 x 75 x 47.9mm		
Weight:	92g		

Part code	*Description*
	Accessories
DFK	Duct fixing kit
TEE	Tee piece air pressure (pack of 10)
PA-TUBE-8MM	PVC tube 8mm o/d x 1.5mm wall, 30m reel
PA-BRK	DIN-rail bracket
PA-699-CAL *	Calibration certificate

Data sheet: PA-699.pdf

Note: * These options must be specified at time of sensor order. They are built to order and not available ex-stock.

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PL-528 Static Pressure Transmitter

The new PL-528 range of static pressure transmitters are suitable for use with a large range of liquids and gases compatible with the FPM (Viton) seal. The pressure transmitter is based on proven ceramic technology for exceptional performance speed and reliability.

FEATURES

- Compact rugged construction
- Negligible temperature influence on accuracy
- IP65 protection
- Electrical terminals and gland to DIN EN175 301-803-A
- Supply short circuit & polarity reversal protection

SPECIFICATION

Supply voltage:	PL-528-x	7Vdc to 33Vdc
	PL-528-x-V	12Vdc to 33Vdc or 24Vac ±15%
Output:	PL-528-x	4-20mA
	PL-528-x-V	0-10Vdc
Response time:	<2ms, 1ms typical	
Overload/rupture pressure:	0 to 4 bar	3 x measuring range full scale
	6 to 40 bar	2.5 x measuring range full scale
Materials:	Pressure connection	S/S 1.4305 / AISI 303
	Sensor	Ceramic Al2O3 (96%)
	Sealing material	FPM (Viton)
Pressure connection:	½" BSP male manometer combi	
Temperature:	Media	-15 to +125°C
	Ambient	-30 to +85°C
Protection:	IP65	
Dimensions:	105 x 65mm	
Weight:	105g	

Part code	*Description*
	4-20mA Output (2-wire loop powered)
PL-528-1	0 to 1 bar Static Pressure Sensor
PL-528-1.6	0 to 1.6 bar
PL-528-2.5	0 to 2.5 bar
PL-528-4	0 to 4 bar
PL-528-6	0 to 6 bar
PL-528-10	0 to 10 bar
PL-528-16	0 to 16 bar
PL-528-25	0 to 25 bar
PL-528-40	0 to 40 bar
	0-10Vdc Output
PL-528-1-V	0 to 1 bar Static Pressure Sensor
PL-528-1.6-V	0 to 1.6 bar
PL-528-2.5-V	0 to 2.5 bar
PL-528-4-V	0 to 4 bar
PL-528-6-V	0 to 6 bar

Part code	*Description*
PL-528-10-V	0 to 10 bar
PL-528-16-V	0 to 16 bar
PL-528-25-V	0 to 25 bar
PL-528-40-V	0 to 40 bar
	Accessories
PL-HS	Pressure Transmitter Heat Sink
PL-528-CAL *	Calibration certificate

Data sheets: PL-528.pdf · PL-HS.pdf

Notes:

1. Heat Sink PL-HS can be used where media has a higher temperature than the sensor allows.
2. * This option must be specified at the time of sensor order. It is built to order and not available ex-stock.

PL-691 Low Range Static Pressure Sensors

The speed and accuracy of the PL-691 range, made possible by the ceramic sensing technology, make them particularly suitable to level sensing and other applications where close control is required.

FEATURES

- Current and voltage output models
- Easy installation and wiring
- Complete with 1.5m cable, ready connected
- Solid state sensing technology
- High over-pressure resilience

SPECIFICATION

Supply voltage:	4-20mA	11 to 33Vdc
	0-10Vdc	18 to 33Vdc or 24Vac ±15%
Response time:	<5ms	
Overload:	2 x measuring range (rupture 3 x)	
Pressure connection:	½" BSP male	
Media:	Water, air and steam (with PL-HS)	
Temperature:	Ambient & media –15 to +80°C	
Protection:	IP65	
Dimensions:	132 x 40mm	
Weight:	260g	

Part code	*Description*
	4-20mA Output (2-wire loop powered)
PL-691-0.1	0 to 100 mbar Static Pressure Sensor
PL-691-0.2	0 to 200 mbar "
PL-691-0.3	0 to 300 mbar "
PL-691-0.6	0 to 600 mbar "
	0-10Vdc Output
PL-691-0.1-V	0 to 100 mbar Static Pressure Sensor
PL-691-0.2-V	0 to 200 mbar "
PL-691-0.3-V	0 to 300 mbar "
PL-691-0.6-V	0 to 600 mbar "

Part code	*Description*
	Accessories
PL-HS	Pressure Transmitter Heat Sink
PL-691-CAL *	Calibration certificate

Data sheet: PL-691.pdf · PL-HS.pdf

Notes:

1. Heat Sink PL-HS can be used where media has a higher temperature than the sensor allows.
2. * This option must be specified at the time of sensor order.

It is built to order and not available ex-stock.

PL-625 Static Pressure Switches

Features optimised polymer diaphragm technology to give long term stability and excellent repeatability of switching points and housed within a rugged industrial case.

FEATURES

- Suitable for liquids and gases
- High vibration resilience
- Adjustable switching differential
- Spade connectors and gland supplied

SPECIFICATION

Max. test pressure:	10 bar
Max. operating pressure:	1½ x range
Pressure connection:	¼" BSP male
Media:	Water, air and steam (with pigtail siphon)
Electrical rating:	6A(3A) @ 250Vac
Contact system:	Changeover contact
Operating range:	–10 to +80°C
Protection:	IP54
Dimensions:	98 x 65mm
Weight:	260g

Part code	*Description*
PL-625-2.2	120 to 2200 mbar (0.12 to 2.2 bar) Switch
PL-625-6	1000 to 6000 mbar (1 to 6 bar) Switch

Data sheet: PL-625.pdf

PL-630 Differential Pressure Switches

Ideal for flow monitoring and proving applications in heating, ventilating and air-conditioning systems.

FEATURES

- Over-pressure safety capability to 10 bar / 20 bar
- Mechanically isolated switching chamber for safety and reliability
- Medium temperatures to 80°C
- Rugged construction
- Adjustable setting and differential

SPECIFICATION

Max. operating pressure and overload on one side (P1>P2):	With range ≤ 200 mbar = 10 bar With range 150 to 1000 mbar = 20 bar Lowest turn-on pressure: 15 mbar
Pressure connection:	1/8" BSP female
Media:	Water, air and steam (with pigtail siphon)
Electrical rating:	1A(0.5A) @ 250Vac
Contact system:	Changeover contact
Operating range:	–10 to +80°C
Protection:	IP65
Dimensions:	110 x 65mm
Weight:	1.08 kg

Part code	*Description*
PL-630-0.02	6 to 20 mbar Diff. Pressure Switch
PL-630-0.06	15 to 60 mbar "
PL-630-0.2	40 to 200 mbar "

Part code	*Description*
PL-630-1	0.15 to 1 bar Diff. Pressure Switch
PL-630-3	1 to 3 bar "
PL-630-5.5	2 to 5.5 bar "

Data sheet: PL-630.pdf

Note: A mounting bracket is supplied with the switch.

PL-652 Low Range Differential Pressure Sensors

A sensor for liquids and gases which uses the 'Hall Effect' sensing technology.

The high over pressure resilience and rugged mechanical construction make this product suitable for a wide range of HVAC applications.

FEATURES

- Output signal in current or voltage
- High over pressure safety margin
- High linearity, accuracy and repeatability
- Rugged IP65 case construction
- Suitable for mildly aggressive liquids and gases

SPECIFICATION

Supply voltage:	20-30Vdc
Max. operating pressure and overload on one side (P1>P2):	10 bar
Pressure connection:	1/8 " BSP female
Media:	Water, air and steam (with pigtail siphon)
Operating range:	–10 to +80°C
Protection:	IP65
Dimensions:	110 x 65mm
Weight:	940g

Part code	*Description*
	4-20mA Output (3-wire)
PL-652-0.05	0 to 50 mbar Diff. Pressure Sensor
	0-10Vdc Output
PL-652-0.05-V	0 to 50 mbar Diff. Pressure Sensor

Part code	*Description*
	Accessory
PL-652-CAL *	Calibration certificate

Data sheet: PL-652.pdf

Notes:
1. A mounting bracket is supplied with the sensor.
2. * This option must be specified at the time of sensor order. It is built to order and not available ex-stock.

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PL-692 Differential Pressure Sensors

For high accuracy and close control applications, the PL-692 features ceramic sensing technology for exceptional accuracy and reliability. The amplified sensing technologies allow high temperature stability and no creepage associated with mechanical systems.

FEATURES

- Current and voltage output models
- Supplied with 6mm o/d fittings
- Easy installation and wiring
- Complete with 1.5m cable, ready connected
- High temperature stability

SPECIFICATION

Supply voltage:	4-20mA	11 to 33Vdc
	0-10Vdc	18 to 33Vdc or 24Vac ±15%
Response time:	<5ms	
Pressure connection:	6mm compression	
Media:	Water, air and steam (with pigtail siphon)	
Temperature:	Ambient & media –15 to +80°C	
Protection:	IP65	
Dimensions:	130 x 40mm	
Weight:	640g	

Notes:

1. A mounting bracket is supplied with the sensor.

2. * This option must be specified at the time of sensor order. It is built to order and not available ex-stock.

Part code	*Description*
	4-20mA Output (2-wire loop powered)
PL-692-0.1	0 to 100 mbar Diff. Pressure Sensor
PL-692-0.2	0 to 200 mbar ″
PL-692-0.4	0 to 400 mbar ″
PL-692-1	0 to 1 bar ″
PL-692-2.5	0 to 2.5 bar ″
PL-692-4	0 to 4 bar ″
PL-692-6	0 to 6 bar ″
PL-692-10	0 to 10 bar ″
PL-692-16	0 to 16 bar ″
	0-10Vdc Output
PL-692-0.1-V	0 to 100 mbar Diff. Pressure Sensor
PL-692-0.2-V	0 to 200 mbar ″
PL-692-0.4-V	0 to 400 mbar ″
PL-692-1-V	0 to 1 bar ″
PL-692-2.5-V	0 to 2.5 bar ″
PL-692-4-V	0 to 4 bar ″
PL-692-6-V	0 to 6 bar ″
PL-692-10-V	0 to 10 bar ″
PL-692-16-V	0 to 16 bar ″
	Accessory
PL-692-CAL *	Calibration certificate

Data sheet: PL-692.pdf

PL-FD113 Liquid DP Switch

Liquid Differential Pressure Switch suitable for monitoring flow status across pumps, chillers, valves etc. The switch has an adjustable set point from 0.3 bar to 4.5 bar with a fixed differential of 0.2 bar.

FEATURES

- SPDT switch
- Single unit covers a wide pressure range
- Simple to configure

Part code	*Description*
PL-FD113	0.3 to 4.5 bar Liquid DP Switch

Note: A mounting bracket is supplied with the switch.

SPECIFICATION

Range:	0.3 to 4.5 bar
Switching differential:	0.2 bar
Pipe connections:	¼″ BSP female
Ambient temperature:	-10 to +70°C
Liquid temperature:	70°C max.
Switch rating:	3A@230Vac, 240Vac
Protection:	IP30
Dimensions:	128 x 175 x 48mm
Weight:	800g

Volume Price Breaks are applicable	
Unit Price (5-9 and 10+)	
PL-FD113	Please see price list

Data sheet: PL-FD113.pdf

PL-PSA Liquid Pressure Switches

Adjustable Pressure Switches, suitable for the monitoring of flow failure and proving in pumps, chillers, valves etc. Units have an adjustable setpoint and differential.

FEATURES

- Adjustable pressure range
- Narrow adjustable differential

Part code	*Description*
PL-PSA1	–0.75 to 3 bar Pressure Switch, auto reset
PL-PSA2	–0.8 to 1.5 bar Pressure Switch, auto reset
PL-PSA3	–0.5 to 7 bar Pressure Switch, auto reset

Volume Price Breaks are applicable	
Unit Price (10-19 and 20+)	
PL-PSA1	Please see price list
PL-PSA2	
PL-PSA3	

SPECIFICATION

Range:	PL-PSA1	–0.75 to 3 bar	PL-PSA2	–0.8 to 1.5 bar
	PL-PSA3	–0.5 to 7 bar		
Differential:	PL-PSA1	0.25 to 1.5 bar	PL-PSA2	0.2 to 1 bar
	PL-PSA3	0.5 to 5 bar		
Pressure connections:	¼″ BSP male			
Ambient temperature:	–50 to +70°C			
Liquid temperature:	–50 to +70°C			
Switch rating:	230Vac @ 24(10)A			
Protection:	IP44			
Dimensions:	42 x 85 x 75mm max.			
Weight:	346g			

Part code	*Description*
	Accessories
PL-PIG	2m of 6mm copper tubing + fittings
BRK	Bracket for PL-PSAx

Data sheet: PL-PSA.pdf

PM-CT-X Current Transformers

The Sontay range of Current Transformers are available in moulded, split core and ring types. They all suitable for use with the PM-EM range of kWh meters.

The split core Current transformers are partially useful for retrofits, upgrades and temporary installations, as they can be fitted without any disruption to the existing installation.

FEATURES

- Ratings from 50 to 800A
- 5A secondary current

SPECIFICATION

Overload:	1.2 x rated current (continuous)	
Frequency:	50/60Hz	
Insulation level:	3kV (50Hz) for 1 minute (not PM-CT-M)	
Connections:	PM-CT-M	Screw terminals
	PM-CT-xSC	1m tails
	PM-CT-R	M6 lug terminals
Conformity:	PM-CT-xSC	IEC185, BS7626, BSEB 60044-1
	PM-CT-R	IEC44-1, IEC185, BS7626
Ambient range:	Humidity	up to 95% RH (non-condensing)
	Temperature	-20 to +85°C (PM-CT-M)
		-30 to +85°C (others)
Weight:	750g max.	

Part code	*Description*
	Moulded Types
PM-CT-M100	100A, 2.5VA Current Transformer
PM-CT-M150	150A, 2.5VA "
PM-CT-M200	200A, 5VA "
PM-CT-M250	250A, 5VA "
PM-CT-M300	300A, 5VA "
PM-CT-M400	400A, 5VA "
PM-CT-M500	500A, 10VA "
PM-CT-M600	600A, 10VA "
PM-CT-M800	800A, 10VA "
	Split Core Types
PM-CT-100SC	100A, 1VA Current Transformer
PM-CT-150SC	150A, 1.5VA "
PM-CT-200SC	200A, .25VA "
PM-CT-250SC	250A, 2.5VA, Current Transformer
PM-CT-300SC	300A, 2.5VA "
PM-CT-400SC	400A, 5VA "
PM-CT-500SC	500A, 5VA "
PM-CT-600SC	600A, 5VA "
PM-CT-800SC	800A, 5VA "
	Ring Types
PM-CT-R50	50A, 2.5VA Current Transformer
PM-CT-R100	100A, 10VA "
PM-CT-R150	150A, 15VA "
PM-CT-R250	250A, 15VA "
PM-CT-R300	300A, 15VA "
PM-CT-R400	400A, 15VA "
PM-CT-R500	500A, 15VA "
PM-CT-R800	800A, 15VA "

Data sheets: PM-CT-M.pdf · PM-xSC.pdf · PM-CT-R.pdf

PM-EM21 Energy Analyser (DIN-rail or panel mounted)

The PM-EM21 is a compact Energy Meter that has a removable front LCD display that allows it to be either DIN-rail or panel mounted. The energy meter is designed for active and reactive energy metering. All operations, including programming and viewing up to seven display pages are performed using the two push buttons on the detachable display. It is possible to block the access to programming by means of a trimmer position on the rear of the display. Certified according to MID Directive, Annex 'B' 'Type examination' relevant to active electrical energy meters (see EU Directive 2004/22/EC, Annex MI-003). For billing use, add annex D option. Extra system information is required please contact Sontay Support.

FEATURES

- Pulsed or Modbus output options
- Self powered
- 5A CT secondary current
- Compact size
- Detachable display
- Multi-use housing for both DIN-rail and panel mounting applications

APPLICATIONS

- 3-Phase, 4-wire balanced & unbalanced load
- 3-Phase, 3-wire balanced & unbalanced load
- 2-Phase, 3-wire
- 1-Phase, 2-wire

CHARACTERISTICS

Measurements:	System	W, var, PF, Hz, Phase-sequence
	Single-phase	VLL, VLN, A, PF, kWh, kvarh

SPECIFICATION

Frequency:	45 to 65Hz	
Display:	2 lines	
Housing:	Nylon PA66, self-extinguishing UL 94 V-0	
Mounting:	DIN-rail or panel	
Output types:	Pulse	Open collector
	Modbus	RS485
RS 485:	Address	Programmable, 1 to 247
	Baud-rate	9600 bit/s
Refresh time:	1/s	
Ambient:	Humidity	0 to 90% (non-condensing)
	Temperature	–25 to +55°C
Protection:	IP50 (front)	
Dimensions:	72 x 72 x 65mm	
Weight:	260g	

Part code	*Description*
PM-EM21-P-MID	Energy Analyser – Pulsed Output
PM-EM21-M-MID	Energy Analyser – Modbus Output
	Options (add to part code above)
-D	Annex D Certification

Data sheet: PM-EM21.pdf

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PM-EM24 Energy Analyser (DIN-rail)

The PM-EM24 DIN-rail mounted Energy Analyser is designed for active and reactive energy metering. When using the optional RS-485 Modbus output it is possible to connect up to three additional pulse inputs from other metering equipment enabling all consumption data to be read from just one meter. PM-EM24 features eight user-selectable applications are available to allow fast setup, with lockable programme selector, and joystick control of up to 31 LCD display pages. Certified according to MID Directive, Annex 'B' 'Type examination' relevant to active electrical energy meters (see EU Directive 2004/22/EC, Annex MI-003). For billing use, add annex D option. Extra system information is required please contact Sontay Support.

FEATURES

- Gas and water measurements and multi-tariff management in one unit
- Easy variable scrolling by means of the front joystick
- Pulsed or Modbus output options
- 5A CT secondary current
- Two digital outputs (alarms or/and pulses) or RS485 communication port

APPLICATIONS

- 3-Phase, 3-wire balanced & unbalanced load
- 3-Phase, 4-wire balanced & unbalanced load
- 2-Phase, 3-wire
- 1-Phase, 2-wire

CHARACTERISTICS

Measurements:	System	VLL, VLN, Admd max, var, VA, W, Wdmd, Wdmd max, VAdmd, VAdmd max, PF, Hz
	Single-phase	VLL, VLN, A, W, var, VA, PF, Admd, kWh, kvarh, hour counter

SPECIFICATION

Frequency:	45 to 65Hz	
Display:	3 lines (1 x 8 digit., 2 x 4 digit.)	
Housing:	Nylon PA66, self-extinguishing UL 94 V-0	
Mounting:	DIN-rail	
Output types:	Pulse	Open collector
	Modbus	RS485
RS 485:	Address	Programmable, 1 to 247,
	Baud-rate	Programmable, 4800, 9600 bit/s
Sampling rate:	1600 samples /s @ 50Hz	
	1900 samples /s @ 60Hz	
Display refresh time:	750m/s	
Ambient:	Humidity	0 to 90% (non-condensing)
	Temperature	–25 to +55°C
Protection:	IP50 (front)	
Dimensions:	90 x 71 x 65mm	
Weight:	360g	

Part code	*Description*
PM-EM24-P	Energy Analyser – Pulsed Output
PM-EM24-M	Energy Analyser – Modbus Output
	Accessories
PM-PMK	Panel door mounting kit
	Options (add to part code above)
-D	Annex D Certification

Data sheet: PM-EM24.pdf

PM-H Current Transducers

The PM-H series of Current Transducers provide accurate load trending information with a choice of 0-5Vdc, 0-10Vdc or 4-20mA output signals. Preset slide switches provide easy field setup of sensed amperage range without jumpers.

Solid and split-core versions are available with current ratings up to 200A.

Split-core versions have a unique self-gripping feature which allows the switch to literally clip on to a cable without the need for a base mounting plate.

APPLICATIONS

- Load trending
- Motor control

FEATURES

- Power the sensor and receive the signal with only two wires
- Split core versions for fast retrofit installation with no need to remove conductor

SPECIFICATION

Supply:	0-10Vdc or 0-5Vdc output	Self powered
	4-20mA output	12-30Vdc loop powered 30mA max
Insulation class:	600Vac RMS	
Temperature range:	-15 to +60°C	
Humidity range:	0 to 95%, non-condensing	
Dimensions:	Split core types	74 x 67 x 27mm
	Solid core types	74 x 65 x 26mm, self-gripping iris
Conformity:	CE marked	
Weight:	180g	

Part code	*Description*
	4-20mA Output
PM-H721LC	10/20/40A, solid core, Current Transducer
PM-H721HC	50/100/200A, solid core
PM-H921	30/60/120A, split core
	0-10Vdc Output
PM-H723LC	10/20/40A, solid core, Current Transducer
PM-H723HC	20/100/150A, solid core
PM-H923	20/100/150A, split core
	0-5Vdc Output
PM-H722LC	10/20/40A, solid core,
PM-H722HC	50/100/200A, solid core
PM-H922	30/60/120A, split core
	Accessory
PM-H-CLIP2	DIN-rail clip (PM-H700 to 900 types)

Data sheets: PM-Hx21.pdf · PM-Hx22.pdf · PM-Hx23.pdf

PM-H Current Switches

PM-H708

PM-H908

PM-H800

PM-300

Sontay's range of Current Switches offer adjustable or fixed setpoint's and provides accurate, reliable and maintenance-free operation. Output switching options include 30Vac/dc @ 1A or 240Vac @ 0.5A, with current ratings of up to 200A. Split-core versions have a unique self-gripping feature which allows the switch to literally clip on to a cable without the need for a base mounting plate.

Adjustable Setpoint Types

Allow for easy detection of broken drive belts, drive belt slip or pump coupling shear.

Fixed Setpoint Types

Provide a cost-effective solution for monitoring the status of unit vents, exhaust fans, recirculation pumps and other fixed loads where belt loss is not a concern.

FEATURES

- More reliable and cost-effective than differential pressure switches
- 100% solid-state output, no moving parts to fail

SPECIFICATION

Supply:	Self-powered from monitored line	
Insulation class:	600Vac RMS	
Hysteresis:	10% typical	
Temperature range:	–35 to +60°C	
Humidity range:	0 to 95%, non-condensing	
Dimensions:	PM-H30x	40 x 40 x 28mm, self-gripping iris
	PM-H600	60 x 90 x 23mm, self-gripping iris
	PM-H608	60 x 55 x 23mm, self-gripping iris
	PM-H70x	74 x 67 x 27mm
	PM-H800	70 x 57 x 27mm
	PM-H90x	74 x 81 x 27mm, self-gripping iris
Conformity:	CE marked	
Weight:	150g max.	

Part code	*Description*
	Adjustable Setpoint Types
PM-H308	0.15 to 50A 30Vac/dc, split core
PM-H608	0.5 to 175A 30Vac/dc, split core
PM-H708	1 to 135A 30Vac/dc, solid core
PM-H709HV	1 to 135A 240Vac, solid core
PM-H908	2.5 to 135A 30Vac/dc, split core
PM-H909HV	2.5 to 135A 240Vac, split core

Volume Price Breaks are applicable	
Unit Price (5+)	
PM-H308	Please see price list
PM-H608	
PM-H708	
PM-H709HV	
PM-H908	
PM-H909HV	

Part code	*Description*
	Fixed Setpoint Types
PM-H300	0.15 to 60A 30Vac/dc, split core
PM-H600	0.5 to 175A 30Vac/dc, split core
PM-H800	1 to 135A 30Vac/dc, solid core
PM-H900	1 to 135A 240Vac, solid core

Volume Price Breaks are applicable	
Unit Price (5+)	
PM-H300	Please see price list
PM-H600	
PM-H800	
PM-H900	

Part code	*Description*
	Accessory
PM-H-CLIP2	DIN-rail clip (PM-H700 to 900 types)

Data sheets: PM-H300.pdf · PM-H308.pdf · PM-H608.pdf · PM-x08.pdf PM-x09HV.pdf · PM-H600.pdf · PM-Hx00.pdf

PS 24Vdc Output Supplies

Sontay's range of 24Vdc Power Supplies offer advanced protection, selfdiagnostics and self-test facilities, to make installation and commissioning quicker and easier than ever before. 240Vac and 24Vac input versions are available, all featuring over-current and over-voltage protection, LED indication of a wide range of conditions, an optional alarm relay output for loss of input and on-PCB reset button.

The 24Vac input type is available in two versions:

1. PS-24-24DC-1A – the input 0V and the output 0V are NOT common.
2. PS-24-24DC-E – the input 0V and the output 0V are common on the PCB.

This allows the user a choice, depending on what type of field wiring is installed.

FEATURES

- Advanced LED indication of faults
- ON-PCB self-test function
- Polarity independent output

SPECIFICATION

Supply:	240Vac and 24Vac	
Output:	24Vdc @ 1A	
LED indication:	Power ON, low output voltage, high output voltage, output voltage within limits, reset button pressed, self-test in progress	
Temperature range:	–10 to +50°C	
Humidity range:	0 to 95%, non-condensing	
Dimensions:	PS-240-24DC-1A	104 x 118 x 88mm
	PS-24-24DC-1A	104 x 74 x 65mm
	PS-240-24DC-E	104 x 74 x 70mm
Weights:	PS-240-24DC-1A	620g
	PS-24-24DC-1A	120g
	PS-240-24DC-E	120g

Part code	*Description*
PS-24-24DC-1A	24Vac-24Vdc, 1A floating Supply Module
PS-24-24DC-E	24Vac-24Vdc, grounded Supply Module
PS-230-24DC-1A	240Vac-24Vdc, 1A Supply Module

Data sheets: PS-24-1A.pdf · PS-24-E.pdf · PS-230.pdf

RE-PR1 — 1.5, 3 and 6kW, Single-phase Controllers

This range of Triac Control Assemblies provide full seamless control of single phase electric heating loads.

The controllers incorporate a temperature trip, automatic reset, integral semi-conductor fuses and heatsink.

FEATURES

- 0-10Vdc or 0-5Vdc control input
- Over temperature protection with auto reset
- No additional heatsinks required
- No external 24V supply required
- No external RFI filters required

SPECIFICATION

Input signal:	0-5Vdc or 0-10Vdc	
Supply:	230Vac RMS ±10%, 50/60Hz	
Over temp:	Trip-in temp.	@ 90°C ±1°C
	Trip-out temp.	@ 85°C ±1°C
Fault condition:	Over temp.	LED flashes in 0.5 sec pulse bursts
	Loss of signal	LED flashes in 1 sec pulse bursts
Ambient temp:	65°C (maximum operational)	
Dimensions:	RE-PR1-F-1.5	112 x 95 x 75mm
	RE-PR1-F-3	112 x 95 x 75mm
	RE-PR1-F-6	112 x 95 x 85mm
Weights:	RE-PR1-F-1.5	280g
	RE-PR1-F-3	280g
	RE-PR1-F-6	700g

Part code	*Description*	*Current rating*
RE-PR1-F-1.5	1.5kW Controller	6.3A
RE-PR1-F-3	3kW Controller	12.5A
RE-PR1-F-6	6kW Controller	25A

Part code	*Description*	*Current rating*
	Accessories	
RE-PR1-F15102	Replacement fuse	(1.5kW)
RE-PR1-F15103	Replacement fuse	(3kW)
RE-PR1-F11307	Replacement fuse	(6kW)
RE-PR1-F-6-GD	Replacement 6kW guard	

Data sheet: RE-PR1-F.pdf

RE-PR3 — 12 and 18kW, 3-phase Controllers

The RE-PR3-DIN-xx range of Thyristor Stacks provides full seamless control of 415V supply loads. They incorporate a temperature trip, automatic reset, alarm output, LED indication (output on) and heatsink.

FEATURES

- 0-10Vdc control input
- Over temperature protection with auto reset
- No additional heatsinks required

SPECIFICATION

Input signal:	0-10Vdc
External supply:	(control) 24Vac/dc ±10%, 50Hz
Supply:	(load) 3-Phase, 400Vac RMS ±10%, 50Hz
Fault condition:	24Vac/dc (as power supply)
	24V alarm terminal normally present, drops to 0V in the event of over-temp. or loss of external power supply.
LED indication:	T1 & T3 LED pulse when output is 'ON'.
Mounting:	DIN-rail
Ambient temp:	40°C (max. operational)
Dimensions:	RE-PR3-DIN-12 217 x 92 x 85mm
	RE-PR3-DIN-18 217 x 92 x 107mm
Weights:	RE-PR3-DIN-12 600g
	RE-PR3-DIN-18 960g

Part code	*Description*	*Current rating*
RE-PR3-DIN-12	12kW Controller	16.7A per phase
RE-PR3-DIN-18	18kW Controller	25A

Data sheet: RE-PR3-DIN.pdf

RE-PR3-E — 27, 36, 54 and 86kW, 3-phase Controllers

These thyristor Control Assemblies provide full seamless control of 3-phase resistive loads of up to 27, 36, 54 & 86kW. The controllers incorporate a temperature trip, automatic reset, alarm output, LED indication (output on) and heatsink.

FEATURES

- 0-5Vdc or 0-10Vdc control input
- Over temperature protection with auto reset
- No additional heatsinks required
- No external 24V supply required

SPECIFICATION

Input signal:	0-5Vdc or 0-10Vdc		
Supply:	(control) 24Vac/dc ±10% (by dipswitch)		
	(load) 3-Phase, 400Vac RMS ±10%, 50/60Hz		
Over temp:	Trip-in temp. @ 90°C ±1°C		
	Trip-out temp. @ 85°C ±1°C		
Fault condition:	Relay rated at 230Vac @ 8A		
Fault status:	Phase loss – LED flashes in 1.5 sec pulse bursts		
	Sensor loss – LED flashes in 0.5 sec pulse bursts		
Ambient temp:	65°C (maximum operational)		
Mounting:	Panel		
Dimensions: RE-PR3-E	-27 150 x 240 x 100mm	-54 250 x 155 x 120mm	
	-36 205 x 155 x 120mm	-86 340 x 232 x 124mm	
Weights: RE-PR3-E	-27 3.0kg	-54 3.6kg	
	-36 3.8kg	-86 6.6kg	

Part code	*Description*	*Current rating*
RE-PR3-E-27	27kW Controller	38A per phase
RE-PR3-E-36	36kW Controller	50A per phase
RE-PR3-E-54	54kW Controller	75A per phase
RE-PR3-E-86	86kW Controller	120A per phase

Note: Larger sizes are available on request.

Part code	*Description*	*Current rating*
	Accessories	
RE-PR3-F11310	Replacement fuse	(27kW)
RE-PR3-F11511	Replacement fuse	(36kW)
RE-PR3-F11513	Replacement fuse	(54kW)
RE-PR3-F11606	Replacement fuse	(86kW)

Data sheets: RE-PR3-E-27 · RE-PR3-E-36&54.pdf · RE-PR3-E-86.pdf

Wireless Technology

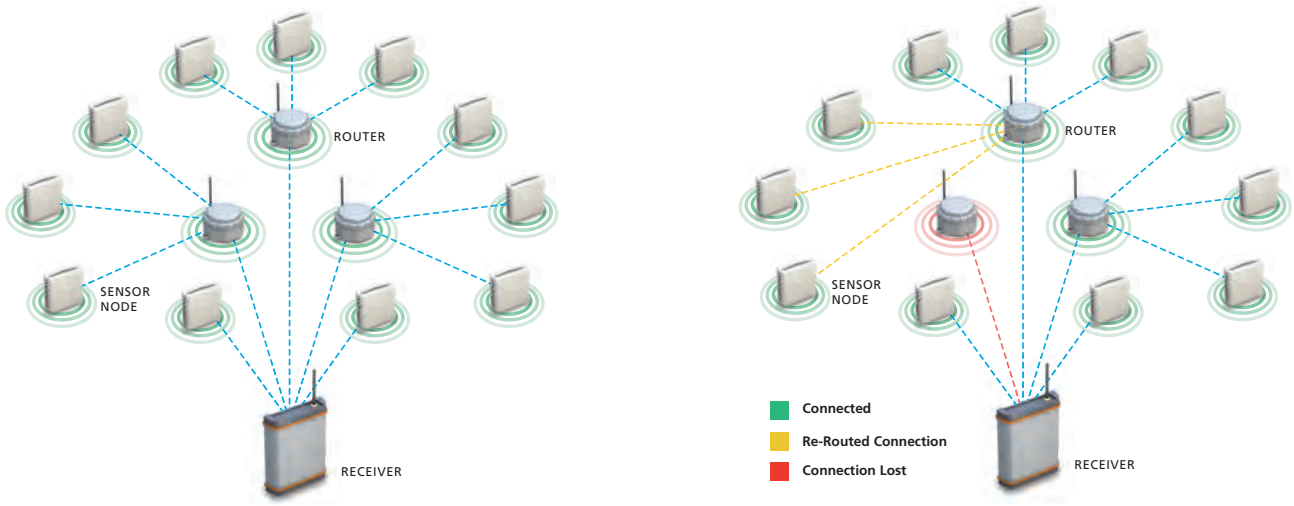
SonNet®, the revolutionary family of wireless sensing devices

SonNet® WIRELESS TECHNOLOGY

HOW SONNET WORKS

SonNet employs the 802.15.4 wireless standard, and uses the 2.4GHz ISM band which features a choice of 16 channels and direct sequence spread spectrum techniques to reduce the effects of interference. To ensure a robust network, a self-healing tree topology is used, which eliminates concerns with reception and reliability often associated with existing 'point-to-point' wireless systems. If a sensor detects a problem with the signal, it will automatically re-route to find the strongest available alternative path to the receiver.

SELF-HEALING TREE TOPOLOGY



Note: The receiver and routers can each support a maximum of 16 directly connected 'child' devices. A router can support a maximum of 8 battery powered EDs, plus up to 8 routers. A receiver can have a maximum of 12 directly connected EDs, while a router can have a maximum of 8 directly connected EDs. If no EDs are directly connected a maximum of 16 routers can be directly connected. There can be a maximum depth of 8 'layers' of routers in a network and a maximum of 50 nodes per network with the RF-RX series of receivers.

EASY INTEGRATION

Integration to existing systems is easily achieved by installing receiver modules into the network and terminating them as standard analogue inputs. Or by using the new RF-RXS Network Receiver Modules to integrate through Niagara Ax™ networks, further reducing controller point count and total system cost.

NETWORK SECURITY

All SonNet devices use unique network identifiers. Only devices with the correct network ID will be allowed to join the network. The ID used by standard system devices is different from the ID used for SSK devices.

Hence, SSK devices cannot join a standard system network and vice versa. When a SonNet system network has been formed, it can be 'locked' to prevent any unauthorised devices joining, even if they are SonNet devices. The CMS can be used to authorise extra SonNet system devices if required. All data transmitted by SonNet devices is encrypted.

BENEFITS

- Lower installation costs
- Easy to install and commission
- Time saving installation
- Energy saving through better control

FEATURES

- Proven 802.15.4 low power network
- Self-healing tree topology
- Up to 5-year battery life
- Simple to integrate analogue receiver modules
- Site Survey Kit (SSK)
- CMS site software for configuration/monitoring
- Complete range of sensor types
- Industry-leading quality and support from Sontay

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SonNet® Site Survey Kit (SSK)

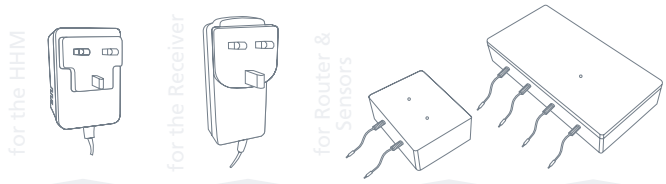
SITE SURVEY KIT

Wireless devices, by their very nature, mean there is always an initial element of uncertainty as to whether devices will be able to communicate reliably. Several factors affect this ability, such as frequency, interference and building materials.

The SonNet SSK (Site Survey Kit) eliminates this uncertainty by allowing a survey of the building using the same power levels and frequency channel the final system will use. Intuitive and simple to use, a plan of devices, routers and receiver can be quickly established to give full confidence in the final installed system, while at the same time allowing a concise list of exactly the right number of devices types to be compiled.

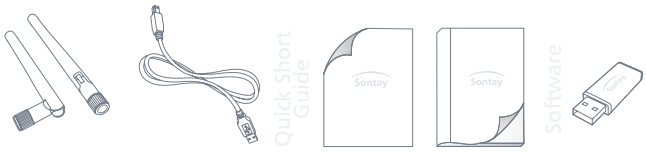
The SonNet Site Survey Kit contains:

1 x Site Survey Receiver (SSR)
1 x Hand-held Monitor (HHM)
4 x Battery Powered Sensor Nodes
2 x Routers*



2 x Charger Units (HHM and Receiver SSR) 2 x Charger Boxes

1 x charger unit for the receiver (SSR)
1 x charger unit for the hand-held tool (HHM)
2 x charger units for the sensor nodes and routers*



4 x Antennae 1 x PC Cable 1 x QSGuide 1 x Manual 1 x USB Stick

4 x Antennae
Quick Start Guide · System User Manual · USB Stick with Software

* ***Note:*** The site survey nodes and routers use rechargeable batteries for convenience on site. Normal routers, installed as part of a SonNet system, are permanently powered by a 24V source while, system nodes are powered by non-rechargeable batteries.

SonNet® Standard System

STANDARD SYSTEM

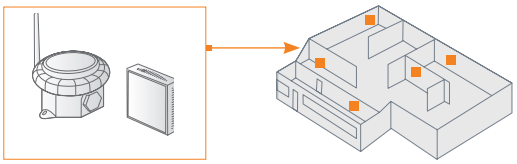
Standard system devices are used for the actual final installation, and consist of the receiver, battery powered 'end devices' (EDs) and, if required, permanently powered routers. EDs achieve long battery life (5 years or more) by taking measurements only at predefined intervals and transmitting them to the receiver for processing.

At all other times an ED is in an ultra-low power mode. EDs can measure temperature and RH as well as offering momentary switch and setpoint knob facilities. Routers are 'awake' at all times to process data from EDs and respond to commands from the receiver. Routers can also have all the measurement features as an ED. The receiver is the heart of the system and processes all data from EDs and routers for integration into a BMS or control system.

How to use the SonNet Radio System:

1. Install Configuration and Monitoring Software (CMS)
2. Connect the PC and switch on the receiver
3. Start the CMS Software *... start the CMS application by clicking the icon*

4. Log on at administrator level
5. Mount all routers, sensors and the receiver *... in accordance with the plan made using the Site Survey Kit. Note the MAC address of each device.*



6. Power up all 24V routers and battery sensor nodes
7. Authorisation of the devices

... Do not click anything whilst this is happening.

8. View a list of all devices
9. Turn off Auto Commision Mode
10. Organise the devices in a graphical view
11. See a summary off a device
12. To map a sensor parameter to a receiver

SonNet® Configuration and Monitoring Software (CMS)

CONFIGURATION AND MONITORING SOFTWARE (CMS)

The CMS is used to commission wireless networks (automatically or manually) and to view the resulting network, both textually and graphically. It can show device hours run, battery status, radio link quality, as well as configuring device parameters such as measurement interval and send on significant change values.

To add devices to the map display, simply 'drag-and-drop' from the text hierarchical display onto the graphic background. A graphic background, typically a floor plan, can be imported, and once the graphical map has been completed and all SonNet devices added, the final layout can be saved.

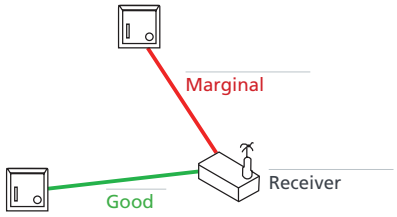
Add the receiver to the plan first, then routers, followed by battery powered nodes. Links are automatically generated, showing the true network architecture.

Different icons are used to depict the receiver, routers and battery powered node, making identification easy. The icons also depict the status of the device, and change to reflect whether a device is OK, out-of-limits, off-line or has a low battery.

LINK STATUS

The link status is represented graphically by the colour of the link drawn.

Visual Display Unit

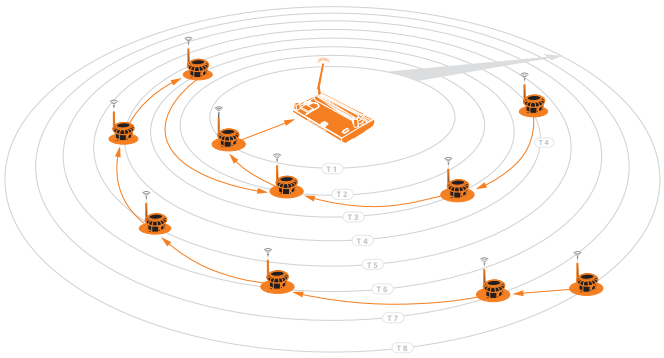


Green	Red
Indicates 'Good' link quality	Indicates 'Marginal' link quality

A quick check on any link status can be made by hovering the mouse cursor over a link on the map display.

CONNECTION

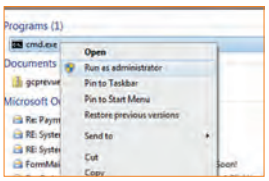
SonNet employs the 802.15.4 wireless standard, and uses the 2.4GHz ISM band which features a choice of 16 channels.



HOW TO USE THE CONFIGURATION AND MONITORING SOFTWARE (CMS)

Install the Software (CMS)

- Onto a PC or laptop computer. Please see page 19 of full User Manual for detailed instructions.

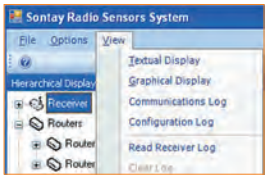


Log on at administrator level

- By clicking <File> then <Switch Admin Mode>. The default password is "admin".

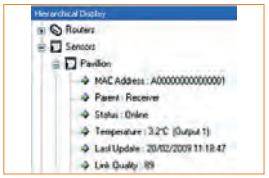
View a list of all devices

- By clicking <View> and <Textual Display> to show a list of devices with expandable information



Organise the devices in a graphical view

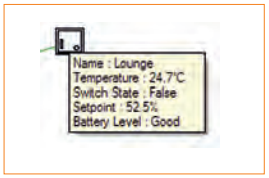
- To show a graphical view of all devices click <View> and <Map Display>



- A floor plan can be selected here for the display. Now the devices can be dragged and dropped into the correct position on the floor plan. The links are automatically drawn between the devices.

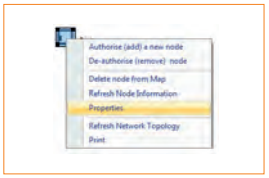
See a summary of a device

- Hover the mouse over the device to see a quick summary of the parameters.

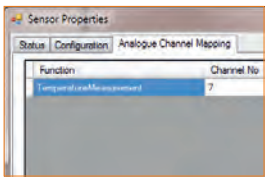


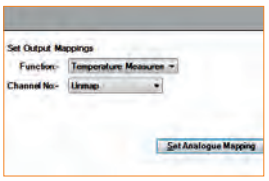
To map a sensor parameter to a receiver

- To map a sensor parameter to a receiver output channel, right click on the device, select <Properties> from the menu, then select the <Analogue Channel Mapping> tab



- Select a function (such as temperature or setpoint) to map, and then select the receiver output to map to. Click the <Set Analogue Mapping> button to complete.





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RF-SSK Site Survey Kit (SSK)

THE SITE SURVEY KIT

Is compiled of a receiver RF-RXSS which is used in conjunction with the Sontay RF-PS522 site survey routers, RF-HHT hand-held monitor and RF-TS911 nodes. Routers are used to route signals from battery powered nodes and other routers to the receiver module, where the signal strength of a direct path is not sufficient for reliable communications.

DATA TRANSMITTION

Data is transmitted back to the receiver at configurable time intervals, or on a configurable change in measured value. Each sensor retains these configurations if the battery becomes discharged or requires replacement.

THE SSK RECEIVER

Automatically selects which of the 16 transmission channels available gives the best radio network performance, taking into account both signal strength and interference levels from adjacent channels and equipment (such as Wi-Fi etc.) The SSK hand-held monitor, nodes and routers automatically find the best path back to the receiver, which may be directly to the receiver or via "parent" routers.

Part code	*Description*
	Site Survey Kit
RF-SSK	**Site Survey Kit (SSK) - containing**
	4 sensor nodes, 2 routers, receiver, hand-held monitor and power chargers for the rechargeable batteries
	(Individual units)
RF-TS-900	Sensor End Device (rechargeable)
RF-PS-500	Plant Router (rechargeable)
RF-HHT	Hand-held Tool
RF-RXSS	Site Survey Reciever

Data sheets: please contact our Customer Services Team or visit www.sontay.com for datasheets

RF-RS Battery Powered Sensors (EDs)

SONNET PARTS

Battery Powered Sensors (EDs)

Sensor nodes are used in conjunction with the Sontay RF-RX20 or RF-RX40 receiver units, and if required (depending on installation topography), Sontay RF-RR series of routers.

Data is transmitted back to the receiver at configurable time intervals, or on a configurable change in measured value.

Each sensor retains these configurations if the battery becomes discharged or requires replacement.

The sensors automatically find the best path back to the receiver, which may be directly to the receiver or via 'parent' routers.

Battery powered nodes are available in four formats:

- Space mounting temperature, with setpoint and momentary switch options
- Space mounting RH&T, with setpoint and momentary switch options
- Plant mounting temperature
- Plant mounting RH&T

SPECIFICATION

Radio Output:	Frequency	2.4GHz, 16 channels, direct-sequence spread spectrum
	Compliance	IEEE 802.15.4-2006
Aerial Characteristics:	Space	Gain 1.2dBi, VSWR 1.5:1
	Plant	Gain 2.0dBi, VSWR 2:1
Data Encryption:	AES 128	
Power Output:	0dBm	
Accuracy:	Temperature	±0.3°C
	Optional RH	±3% RH
Battery Type:	Space	3.6V AA 2.4Ah Li-SOCl$_2$, non-rechargeable
	Plant	3.6V 2.1Ah 2/3 A Li-SOC$_{l2}$, non-rechargeable
Battery Life:	>3 years (depending on configuration)	
Plant Sensor Types:	Duct, outside air, outside air with solar radiation shield, immersion, strap-on and flying lead	

Part code	*Description*
	End Sensing Devices
RF-RS-T-911	Space Temperature Sensor *
RF-RS-T-522	Duct Sensor - 150mm probe
RF-RS-T-541	Immersion Sensor - 150mm probe
RF-RS-T-551	Clamp-on Sensor
RF-RS-T-531	Outside Air Sensor
RF-RS-T-532	Outside Air Sensor c/w rad. sheild
RF-RS-T-555-2	Flying Lead Sensor - 2m
RF-RS-T-555-5	Flying Lead Sensor - 5m
RF-RS-R-911	Space Humidity & temp. Sensor *
RF-RS-R-522	Duct Humidity & temp. Sensor
RF-RS-R-531	Wall Humidity & temp. Sensor
RF-RS-R-841	Outside Humidity & temp. Sensor
	*** Sensor Options for -911 only (add to part code)**
-MS	Momentary switch interface **
-SP	Set-point adjuster interface
-MS-SP	Momentary override & set-point **

** The **-MS** switch option is 'momentary' in its physical action, but 'latching' in its radio output. When the momentary switch is pressed, the current output status is inverted (TRUE goes to FALSE or FALSE goes to TRUE) and stays in the new state until the switch is pressed again. Please allow for this action in the controller strategy to achieve the required control action.

Data sheets: please contact our Customer Services Team or visit www.sontay.com for datasheets

RF-RR 24V Powered Routers

SONNET PARTS

24V Powered Routers

These routers are used in conjunction with the Sontay RF-RX20 or RF-RX40 receiver units, and RF-RS series of battery powered radio sensors, and are used to route signals from battery powered nodes and other routers to the receiver module, where the signal strength of a direct path is not sufficient for reliable communications.

Note: Each router can support a maximum of 16 'children', which can consist of a maximum of 8 battery powered nodes and 8 routers, or up to 16 routers if there are no battery powered nodes. Consideration should be given to network planning for redundancy in case of router failure or damage.

Routers automatically find the best path back to the receiver, which may be directly to the receiver or via other 'parent' routers.

24V powered routers are available in five formats:

- Space mounting temperature, with setpoint & momentary switch options
- Space mounting RH&T, with setpoint and momentary switch options
- Plant mounting router, no sensor functions
- Plant mounting temperature
- Plant mounting RH&T

SPECIFICATION

Radio Output:	Frequency	2.4GHz, 16 channels, direct-sequencespread spectrum
	Compliance	IEEE 802.15.4-2006
Aerial Characteristics:	Space	Gain 1.2dBi, VSWR 1.5:1
	Plant	Gain 2.0dBi, VSWR 2:1
Data Encryption:	AES 128	
Power Output:	+10dBm	
Accuracy:	Temperature	±0.3°C
	Optional RH	±3% RH
Power Supply:	24Vac/dc	
Plant Router Types:	Duct, outside air, outside air with solar radiation shield, immersion, strap-on and flying lead	

Part code	*Description*
	Routers
RF-RR-900	Router (space housing)
RF-RR-500	Router (plant housing)
	Router Sensors
RF-RR-T-911	Space Temp. Sensor/Router *
RF-RR-T-522	Duct Sensor/Router - 150mm probe
RF-RR-T-541	Router Immersion Sensor - 150mm probe
RF-RR-T-551	Router Clamp-on Sensor
RF-RR-T-531	Router Outside Air Sensor
RF-RR-T-532	Router Outside Air Sensor c/w Rad Shield
RF-RR-T-555-2	Router Flying Lead Sensor - 2m
RF-RR-T-555-5	Router Flying Lead Sensor - 5m
RF-RR-R-911	Router Space Humidity & temp. Sensor *
RF-RR-R-522	Router Duct Humidity & temp. Sensor
RF-RR-R-531	Router Wall Humidity & temp. Sensor
RF-RR-R-841	Router Outside Humidity & temp. Sensor
	*** Sensor/Router Options for -911 only (add to part code)**
-MS	Momentary switch interface **
-SP	Set-point adjuster interface
-MS-SP	Momentary override & set-point **

** The **-MS** switch option is 'momentary' in its physical action, but 'latching' in its radio output. When the momentary switch is pressed, the current output status is inverted (TRUE goes to FALSE or FALSE goes to TRUE) and stays in the new state until the switch is pressed again. Please allow for this action in the controller strategy to achieve the required control action.

Data sheets: please contact our Customer Services Team or visit www.sontay.com for datasheets

RF-RX System Receiver

SONNET PARTS

System Receiver

The Sontay RF-RX20 or RF-RX40 receiver collects data from all other devices on the radio network, including measurements from sensors, link quality for all links formed in the network, battery levels for all battery powered devices, hours run for all devices and the current status of all devices.

Note: Each receiver can support a maximum of 16 'children', which can consist of a maximum of 12 battery powered nodes and 4 routers, or up to 16 routers if there are no battery powered nodes.

A USB socket is provided for connection to a PC or laptop running the Sontay SonNet CMS software.

Receivers are available in two formats:

- RF-RX20 - 20 x 0-10Vdc analogue outputs
- RF-RX40 - 40 x 0-10Vdc analogue outputs

For a live demonstration of the SonNet Wireless Monitoring System please contact the Sontay Sales Team at sonnet@sontay.com.

Part code	*Description*
	Receiver Modules
RF-RX20	Receiver with 20 x 0-10Vdc outputs
RF-RX40	Receiver with 40 x 0-10Vdc outputs

SPECIFICATION

Radio Output:	Frequency	2.4GHz,16 channels, direct-sequence spread spectrum
	Compliance	IEEE 802.15.4-2006
Aerial Characteristics:	Gain:	2.0dBi
	VSWR:	2:1
Data Encryption:	AES 128	
Power Output:	+10dBm	
Analogue Outputs:	RF-RX20	20 x 0-10Vdc analogue outputs @10mA max. each
	RF-RX40	40 x 0-10Vdc analogue outputs @10mA max. each
Output ranges:	Temp.	–10°C to +70°C
	RH	0% to +100%
	Setpoint	0% to +100%
	Switch	0Vdc = OFF, 10Vdc = ON
Power Supply:	24Vac/dc	
Housing:	DIN-rail, W203 x H104 x D38mm (excluding aerial)	

Part code	*Description*
	RF-Accessories
RF-RS	Battery for space sensors
RF-RP	Battery for plant sensors
RF-AERIAL-PM2	Aerial extension c/w bulk head fitting - 2m
RF-AERIAL-PM5	Aerial extension c/w bulk head fitting - 5m

Data sheets: please contact our Customer Services Team or visit www.sontay.com for datasheets

RF-RXS | Network Radio Receiver, Niagara Ax™ Option Card

NEW for 2012 Available early 2012

Following on from the success of Sontay's award-winning SonNet wireless sensor system, the new RF-RXS receivers allow quick and seamless integration with Tridium's range of JACE controllers, with all supported BMS protocols, such as BACnet, LonTalk and ModBus.

The integral web interface allows an engineer to not only gather measurement data from SonNet wireless devices but perform radio network management services such as auto-commissioning of SonNet wireless devices and setting device configuration parameters.

Powered by niagara AX FRAMEWORK®

2 VERSIONS OF THE RECEIVER ARE AVAILABLE

- **RF-RXS DIN rail mounted housing** with serial connection to COM1 or COM2 of a JACE
- **RF-RXS-N internally** mounting JACE option card

SPECIFICATION:

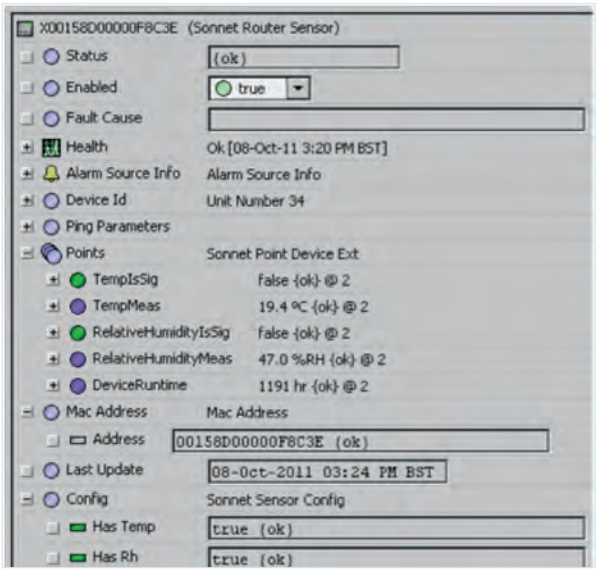
Radio Output:	Frequency	2.4GHz 16 channels, automatically selected
	Direct-sequence spread spectrum	
	Compliance IEEE 802.15.4-2006	
Aerial Characteristics:	Gain 3.0dBi	
	VSWR <2:1	
Data Encryption:	AES 128	
Power Output:	+10dBm	
Power Supply:	24Vdc ±15%	
	24Vac ±15%, 50/60 Hz	
Serial communications:	USB 2.0	
	Serial 9-pin RS-232	
Environmental:	Operating	Temperature -10°C to +50°C
		RH 0 to 90%, non-condensing
	Storage	Temperature -10°C to +80°C
		RH 0 to 90%, non-condensing
Dimensions:	100mm x 70mm x 58mm	
Country of origin:	UK	

Part code	*Description*
RF-RXS	DIN-rail Mounted Network Radio Receiver
RF-RXS-N	Internally Mounted Network Radio Receiver
RF-AERIAL-PM2	Aerial extension c/w bulk head fitting - 2m
RF-AERIAL-PM5	Aerial extension c/w bulk head fitting - 5m

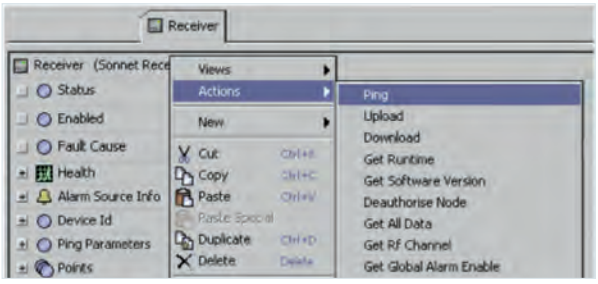
Data sheet: RF-RXS.pdf · RF-RXS-N.pdf

SOFTWARE SCREENSHOTS

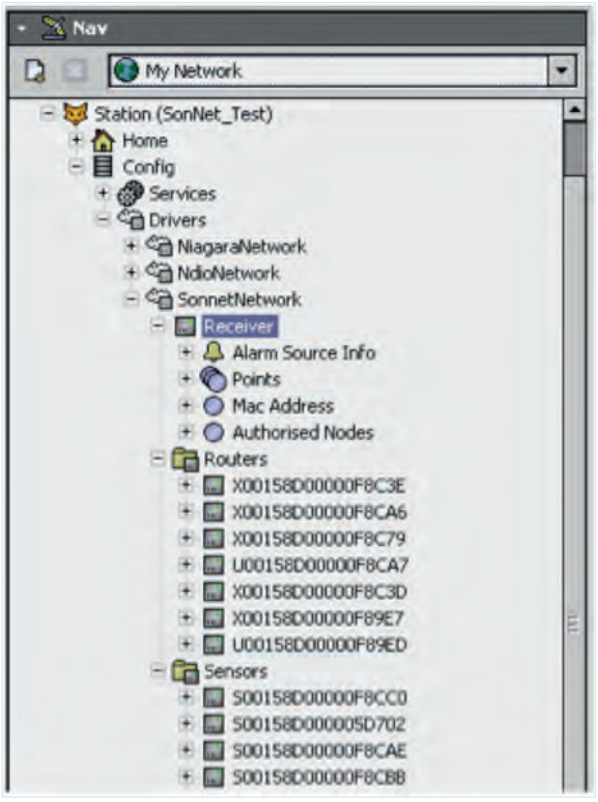
SonNet Router Properties View


X00158D00000F8C3E (Sonnet Router Sensor)
Status {ok}
Enabled true
Fault Cause
Health Ok [08-Oct-11 3:20 PM BST]
Alarm Source Info Alarm Source Info
Device Id Unit Number 34
Ping Parameters
Points Sonnet Point Device Ext
TempIsSig false {ok} @ 2
TempMeas 19.4 °C {ok} @ 2
RelativeHumidityIsSig false {ok} @ 2
RelativeHumidityMeas 47.0 %RH {ok} @ 2
DeviceRuntime 1191 hr {ok} @ 2
Mac Address Mac Address
Address 00158D00000F8C3E {ok}
Last Update 08-Oct-2011 03:24 PM BST
Config Sonnet Sensor Config
Has Temp true {ok}
Has Rh true {ok}

SonNet Receiver Actions Menu



SonNet Navigation Tree



RH-1000 Space RH & T - New Space Housing for 2012

NEW for 2012 Available Q1

Completely revised for the new Sontay 1000 series space housing, and using the latest high accuracy RH & T element, the new RH-1000 offers new options such as setpoint adjustment, momentary switch and fan speed selection, together with a multi-line backlit LCD display. A 0-10Vdc override status input option is also available, allowing occupancy indication on the display.

0-10Vdc or 4-20mA (loop or externally powered) outputs for temperature and RH are available as standard, with optional 0-5Vdc. A custom output range for temperature can be requested, between 0°C and +50°C. A directly connected passive thermistor temperature output is also available, as an alternative to the standard active temperature output.

FEATURES

- Designed to be aesthetically pleasing
- Blends into the fabric of any building
- Developed using customer feedback and involvement

Note: These products will be available from April 2012

SPECIFICATION

Active Outputs:	Voltage	0-10Vdc @ 4k7Ω min
		0-5Vdc @ 4k7Ω min (optional)
	Current	4-20mA @ 250Ω min
Optional Passive Outputs:	Thermistor	Any Sontay thermistor type*
	Setpoint	2-wire 1kΩ to 11kΩ, linear
	Override	VFC
	Fan Speed	3 position Resistive
		5 position Resistive
Output Ranges:	RH	0-100%
	Temperature	0°C to +40°C as standard
		(others available on request: Range of 0°C and +50°C)
Power Supply:	0-10Vdc	12 - 26Vac or 16 - 26Vdc @ 60mA max
	4-20mA	20 - 26Vdc only @ 70mA max
Temp. Accuracies:	±0.5°C (between +20°C and +40°C)	
Ambient:	Temperature	0°C to 50°C
	RH	0 to 95% RH, non-condensing
Housing material:	ABS (flame retardant)	
Dimensions:	115 x 85 x 28mm	
Weight:	180g	

* ***Notes:***

1. **–T** version uses a thermistor element for direct measurement of temperature. Please specify thermistor type when ordering.

2. Please see page 71 for Thermistor Types and Compatibility Chart.

Part code	*Description*
RH-1000-AH	RH & T High Accuracy Transmitter (±2%)
RH-1000	RH & T Transmitter (±3%)
	Suffixes (add to part code)
-T	Direct resistive temperature output
-SP	2-wire, 1-11KΩ setpoint
-MS	Momentary switch

Part code	*Description*
	Suffixes (add to part code)
-FS3	3-speed fan switch
-FS5	5-speed fan switch
-LCD	Integral LCD display for RH and temp.
-TR	Custom temperature output range

Data sheet: RH-1000.pdf

RH-DT Duct Mount RH & T Sensors

The RH-DT Duct Mounted Humidity and Temperature Sensors offer the latest technology for high accuracy RH measurement. Units can be ordered with an optional direct resistive temperature output (where this option is required, the type of temperature element MUST be specified at the time of ordering).

The RH-DT01 is also available with additional outputs for enthalpy and dewpoint (RH-DT01-EN). Non-standard temperature output ranges can be specified at time of order.

FEATURES

- High stability and reliability
- Two part terminals for ease of connection
- No loss of accuracy up to 100% RH
- Built-in circuitry diagnostics

SPECIFICATION

RH accuracy:	RH-DT01	±2%
	RH-DT02	±3%
Temp. accuracy:	±0.3°C	
Long term stability:	<2% RH p.a.	
Ambient range:	–10 to +50°C	
Power supply:	4-20mA	20-35Vdc for 500Ω loop resistance
	0-10Vdc	17 to 34Vdc, 14 to 26Vac (4.7kΩ min.)
Output:	Standard	4-20mA or 0-10Vdc RH & temperature
Output ranges:	Humidity	0 to 100%
	Temp.	–20 to +50°C as standard, others available on request
Protection:	IP65	
Dimensions:	Housing	57 x 90mm diameter
	Probe	210 x 19mm diameter
Weight:	220g	

Part code	*Description*
RH-DT01	RH & T High Accuracy Transmitter (±2%)
RH-DT02	RH & T Transmitter (±3%)

Volume Price Breaks are applicable	
Unit Price (5+)	
RH-DT01	Please see price list
RH-DT02	

Data sheet: RH-DT.pdf

Part code	*Description*
	Suffixes (add to part code)
-T	Direct resistive temperature output
-EN	Enthalpy and dewpoint outputs (available only with the RH-OS01)
-TR	Custom temperature output range
	Accessories
DPA	Duct probe adjustment flange
RH-RS	Radiation shield for RH-DT01 and RH-DT02

Notes:

1. **-T** version uses a thermistor element for direct measurement of temperature. Please specify thermistor type when ordering.

2. Please see page 71 for Thermistor Types and Compatibility Chart.

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RH-OS Outside Air RH & T Sensors

The RH-OS Outside Mounted Humidity and Temperature Sensors offer the latest technology for high accuracy RH measurement.

Units can be ordered with an optional direct resistive temperature output (where this option is required, the type of temperature element MUST be specified at the time of ordering).

The RH-OS01 is also available with additional outputs for enthalpy and dewpoint (RH-OS01-EN). Non-standard temperature output ranges can be specified at time of order.

FEATURES

- High stability and reliability
- Two part terminals for ease of connection
- No loss of accuracy up to 100% RH
- Built-in circuitry diagnostics

SPECIFICATION

RH accuracy:	RH-OS01	±2%
	RH-OS02	±3%
Temp. accuracy:	±0.3°C	
Long term stability:	< 2% RH p.a.	
Ambient range:	–10 to +50°C	
Power supply:	4-20mA	20-35Vdc for 500Ω loop resistance
	0-10Vdc	17 to 34Vdc, 14 to 26Vac (4.7kΩ min.)
Output:	Standard	4-20mA or 0-10Vdc RH & temperature
Output ranges:	Humidity	0 to 100%
	Temp.	–20 to +50°C as standard, others available on request
Protection:	IP65	
Dimensions:	Housing	57 x 90mm diameter
	Shield	200 x 118mm diameter
Weight:	1.14kg	

Part code	*Description*
RH-OS01	RH & T High Accuracy Transmitter (±2%)
RH-OS02	RH & T Transmitter (±3%)
	Suffixes (add to part code)
-T	Direct resistive temperature output
-EN	Enthalpy and dewpoint outputs (available only with the RH-OS01)
-TR	Custom temperature output range

Data sheet: RH-OS.pdf

Notes:

1. **-T** version uses a thermistor element for direct measurement of temperature. Please specify thermistor type when ordering.

2. Please see page 71 for Thermistor Types and Compatibility Chart.

RH-SP Space Mount RH & T Sensors

The RH-SP Space Mounted Humidity and Temperature Sensors offer the latest technology for high accuracy RH measurement. Units can be ordered with an optional integral LCD display for temperature and RH.

The RH-SP01 is also available with additional outputs for enthalpy and dewpoint (RH-SP01-EN). Non-standard temperature output ranges can be specified at time of order.

FEATURES

- High stability and reliability
- Two part terminals for ease of connection
- No loss of accuracy up to 100% RH
- Built-in circuitry diagnostics
- Three line fully configurable LCD display option

SPECIFICATION

RH accuracy:	RH-SP01	±2%
	RH-SP02	±3%
Temp. accuracy:	±0.3°C	
Long term stability:	<2% RH p.a.	
Ambient range:	–10 to +50°C	
Power supply:	4-20mA	20-35Vdc for 500Ω loop resistance
	0-10Vdc	17 to 34Vdc, 14 to 26Vac (4.7kΩ min.)
Output:	Standard 4-20mA or 0-10Vdc RH & temperature	
Output ranges:	Humidity	0 to 100%
	Temp.	0 to 40°C as standard, others available on request
Protection:	IP20	
Dimensions:	85 x 85 x 27mm	
Weight:	100g	

Part code	*Description*
RH-SP01	RH & T High Accuracy Transmitter (±2%)
RH-SP02	RH & T Transmitter (±3%)
Volume Price Breaks are applicable	
Unit Price (5+)	
RH-SP01	Please see price list
RH-SP02	

Part code	*Description*
	Suffixes (add to part code)
-EN	Enthalpy and dewpoint outputs (available only with the RH-SP01)
-LCD	Integral LCD display for RH and temp.
-TR	Custom temperature output range

Data sheet: RH-SP.pdf

Note:

The LCD can display °C and °F readings and user definable text on one line.

RH-WL Wall Mount RH & T Sensors

The RH-WL Wall Mounted Humidity and Temperature Sensors offer the latest technology for high accuracy RH measurement. Units can be ordered with an optional direct resistive temperature output (where this option is required, the type of temperature element MUST be specified at the time of ordering). The RH-WL01 is also available with additional outputs for enthalpy and dewpoint (RH-WL01-EN). Non-standard temperature output ranges can be specified at time of order.

FEATURES

- High stability and reliability
- Two part terminals for ease of connection
- No loss of accuracy up to 100% RH
- Built-in circuitry diagnostics

SPECIFICATION

RH accuracy:	RH-WL01	±2%
	RH-WL02	±3%
Temp.accuracy:	±0.3°C	
Long term stability:	< 2% RH p.a.	
Ambient range:	–10 to +50°C	
Power supply:	4-20mA	20-35Vdc for 500Ω loop resistance
	0-10Vdc	17 to 34Vdc, 14 to 26Vac (4.7kΩ min.)
Output:	Standard	4-20mA or 0-10Vdc RH & temperature
Output ranges:	Humidity	0 to 100%
	Temp.	–20 to +50°C as standard, others available on request
Protection:	IP54	
Dimensions:	Housing	57 x 90mm diameter
	Probe	90 x 19mm diameter
Weight:	180g	

Part code	*Description*
RH-WL01	RH & T High Accuracy Transmitter (±2%)
RH-WL02	RH & T Transmitter (±3%)
	Suffixes (add to part code)
-T	Direct resistive temperature output
-EN	Enthalpy and dewpoint outputs

Part code	*Description*
	(available only with the RH-WL01)
-TR	Custom temperature output range

Data sheet: RH-WL.pdf

Notes:

1. **-T** version uses a thermistor element for direct measurement of temperature. Please specify thermistor type when ordering.

2. Please see page 71 for Thermistor Types and Compatibility Chart.

RH-SH Humidistats

RH-SH Humidistats are designed for the on/off control of humidification and dehumidification equipment, or the initiation of alarms or override controls.
High quality sensing elements ensure accurate measurement and switching differential.

FEATURES

- Single and 2-stage units available (space types only)
- Duct or space mounted units

SPECIFICATION

Case construction:	ABS	
Operating range:	30-100% RH	
Differential (per stage):	4% RH	
Stage differential:	2 to 15% RH	
Switch rating:	Duct	15(8)A @ 240Vac
	Room	5(0.2)A @ 250Vac
Cable entry:	20mm gland PG11 thread (not supplied)	
Protection:	RH-SH-xR	IP20, RH-SH-xD - IP65
	RH-SH-1DE	IP20
Dimensions:	RH-SH-xR	Housing 115 x 35 x 70mm
	RH-SH-xD	Housing 108 x 72 x 72mm
	Probe	19mm dia. x 225mm long
Weight:	300g	

Part code	*Description*
	Room Humidistats
RH-SH-1R	Single-stage, concealed setpoint adjust.
RH-SH-1RE	Single-stage,exposed setpoint adjust.
RH-SH-2R	2-stage, concealed setpoint adjust.

Part code	*Description*
	Duct Humidistats
RH-SH-1D	Single-stage, concealed setpoint adjust.
RH-SH-1DE	Single-stage, exposed setpoint adjust.

Data sheets: RH-SH-xR.pdf · RH-SH-xD.pdf

SD-821 Duct Smoke Detector

NEW for 2012

The new SD-821 provides relay outputs on the detection of smoke or fault conditions. The alarm output relay can be either manual or auto reset depending on application type.

FEATURES

- Manual or auto reset
- Fault relay output
- Self-test feature

SPECIFICATION

Supply voltage:	24Vac/dc, ±20%	
Power consumption:	50mA max.	
Relay outputs (smoke & fault):	SPST 2A @ 48V	
Minimum duct size:	100 x 320mm	
Maximum duct size:	450 x 450mm	
LED indication:	On in alarm	
Reset:	Manual or auto reset, selectable	
Housing:	Material	ABS (flame retardant type VO)
	Dimensions	55 x 90mm dia.
Probe:	Material	Plastic
	Dimensions	300 x 20mm diameter
Ambient range:	Temperature	10 to 40°C
	Ambient	20 to 80% non-condensing
Protection:	IP65	
Weight:	350g	

Part code	*Description*
SD-821	Duct Smoke Detector

Data sheet: SD-821.pdf

ST-CM Multi-stage Capillary Thermostats

This range of Capillary Thermostats can be used to control the temperature of liquids and gases in a variety of applications. Liquid filled sensing elements ensure rapid response and accurate switching differentials.

FEATURES

- Two or four-stage versions
- Robust housing

Part code	*Description*	*Range*
ST-CM01	Auto Reset, 2-stage Thermostat	–30 to +30°C
ST-CM02	Auto Reset, 2-stage Thermostat	20 to 90°C

Data sheet: ST-CM.pdf

SPECIFICATION

Switch rating:	24 to 250Vac @ 15(8)A	
Sensing element:	Liquid filled copper bulb	
Housing material:	Cover	ABS
	Base	Byblend
Ambient range:	Housing temp.	–35 to +65°C
	RH	0 to 95% non-condensing
Conformity:	CE marked	
Protection:	IP65	
Dimensions:	Housing	108 x 70 x 72mm
	Bulb	9.5mm dia. x 124mm
	Capillary	1.5m
Weight:	560g	

ST-CS General Purpose Capillary Thermostats

A range of General Purpose Capillary Thermostats for a wide variety of applications. Liquid filled sensing elements ensure rapid response and accurate switching differentials.

FEATURES

- Setting indicator
- Easy adjustment of setpoint
- Robust housing

Part code	*Description*	*Range*
ST-CS01	IP54, Manual Reset Thermostat	–10 to +12°C
ST-CS03	IP54, Auto Reset Thermostat	30 to 90°C
ST-CS04	IP54, Auto Reset Thermostat	50 to 140°C
ST-CS05	IP54, Manual Reset Thermostat	50 to 140°C
ST-CS06	IP65, Auto Reset Thermostat	–30 to +30°C
ST-CS07	IP65, Auto Reset Thermostat	20 to 90°C
ST-CS08	IP65, Auto Reset Thermostat	50 to 120°C

Data sheet: ST-CS.pdf

SPECIFICATION

Switch rating:	CS01, CS06 & CS08 24 to 250Vac @ 15(8)A		
	CS03 to CS05	250Vac @ 10(1.5)A	
Sensing element:	CS01	Gas filled copper element	
	CS03 to CS05	Liquid filled copper bulb for contact with PVC protection	
Housing material:	CS01	Cover	Polycarbonate
		Base	Polyamide
	CS03 to CS05	Cover	ABS
		Base	Byblend
Capillary length:	CS01 - 1.8m, CS02 to CS08 - 1.5m		
Ambient range:	Housing temp.	0 to 55°C (–10 to +65°C)	
	RH	0 to 95% non-condensing	
Conformity:	CE marked		
Protection:	CS01 to CS05 IP54		
	CS06 to CS08 IP65		
Dimensions:	Housing	CS01	130 x 110 x 70mm
		CS03 to CS08	108 x 70 x 72mm
	Bulb	CS03 to CS05	6.8mm dia. x 124mm
		CS06 & CS07	9.5mm dia. x 124mm
		CS08	8mm dia. x 124mm
		Capillary	1.5m
Weight:	340g		

ST-DS Duct Thermostats

These Duct Thermostats can be used to control the temperature in duct work systems. Liquid filled sensing elements ensure rapid response and accurate switching differentials.

They are available in two types:

Control thermostats (auto reset)
with an adjustable setpoint, adjustable differential and auto reset, which provides a switched output to a heater, or controller.

Safety thermostats (manual reset)
with an adjustable setpoint, fixed differential and manual reset, which provides high limit cut-out on boilers etc.

FEATURES

- Robust housing
- Rapid response and accurate switching

SPECIFICATION

Switch rating:	DS01 & DS02	250Vac @ 10(1.5)A
	DS08	24 to 250Vac @ 15(8)A
Sensing element:	Liquid filled copper bulb	
Housing material:	Cover	ABS
	Base	Byblend
Ambient range:	Housing temp.	–35 to +65°C
	RH	0 to 95% non-condensing
Conformity:	CE marked	
Protection:	DS01 & DS02	IP54
	DS03 & DS04	IP43
	DS08	IP65
Dimensions:	Housing	108 x 70 x 72mm
	Protection spring	200mm length
Weight:	700g	

Part code	*Description*	*Range*
ST-DS01	IP54, Auto Reset Thermostat	–35 to +35°C
ST-DS02	IP54, Auto Reset Thermostat	0 to 60°C
ST-DS04	IP43, Manual Reset Thermostat	20 to 90°C
ST-DS06	IP65, Auto Reset Thermostat	20 to 90°C
ST-DS08	IP65, Auto Reset Thermostat	–30 to +30°C

Data sheet: ST-DS.pdf

ST-FRE Capillary Frost Thermostats

The ST-FRE range of Frost Thermostats provide a switch output based on the average temperature detected along a two or six metre capillary sensor.

A common application is for frost protection on fresh air intakes or airconditioning systems, to prevent the icing up of filters, fans and coils. The capillary is fixed in a matrix across the duct, in a position downstream of the pre-heater or frost coil.

FEATURES

- Easy adjustment of setpoint
- Setting indicator
- IP65 option
- Pre-set thermostats to speed commissioning time

SPECIFICATION

Control range:	–30 to +10°C	
Differential:	ST-FRE1 & 3	2 to 16°C
	ST-FRE2 & 4	2.5°C (fixed)
Switch rating:	230Vac @ 24(10)A	
	24Vdc @ 3A	
Manual reset:	On low temperature (ST-FRE2 & ST-FRE4)	
Housing material:	ABS	
Housing dimensions:	86 x 75 x 44mm	
Capillary:	Material	Copper
	Charge	Vapour
	Max. temp.	150°C
Dimensions:	2m or 6m x 1.8mm dia.	
Protection:	IP44 or IP65	
Weight:	476g	

Part code	Description
	Standard Thermostats
ST-FRE1	Auto reset, 6m capillary, Frost Thermostat
ST-FRE2	Manual reset, 6m capillary, Frost Thermostat
ST-FRE3	Auto reset, 2m capillary, Frost Thermostat
ST-FRE4	Manual reset, 2m capillary, Frost Thermostat
	Pre-set Thermostats
ST-FRE1-CAL	Auto reset, 6m capillary pre-set to 6°C *
ST-FRE2-CAL	Manual reset, 6m capillary pre-set to 6°C *
ST-FRE3-CAL	Auto reset, 2m capillary pre-set to 6°C *
ST-FRE4-CAL	Manual reset, 2m capillary pre-set to 6°C *

Volume Price Breaks are applicable	
Unit Price (10+)	
ST-FRE1	Please see price list
ST-FRE2	

Part code	Description
	IP65 Housing and Thermostat
ST-FRE1-IP65	Auto reset, 6m capillary, Frost Thermostat
ST-FRE2-IP65	Manual reset, 6m capillary, Frost Thermostat
ST-FRE3-IP65	Auto reset, 2m capillary, Frost Thermostat
ST-FRE4-IP65	Manual reset, 2m capillary, Frost Thermostat
	Accessories
ST-DFK	Pack of six additional capillary fixing clips
BRK	Mounting bracket for ST-FREx

Data sheet: ST-FRE.pdf

Note: All these thermostats include six capillary fixing clips as standard.
* Other pre-set ranges available on request.

ST-IM Immersion Thermostat

The ST-IM range of Immersion Thermostats can be used to control the temperature of liquids in pipe work systems.

These are available in two types:

Control thermostats (auto reset)
with an adjustable setpoint, adjustable differential and auto reset, which provides a switched output to a heater, cooler or controller.

Safety thermostats (manual reset)
with an adjustable setpoint, fixed differential and manual reset, to provide high limit cut-out on boilers etc.

FEATURES

- Units supplied with brass pocket
- Single and dual stage versions
- Robust housing

SPECIFICATION

Switch rating:	24 to 250Vac @ 15(8)A	
Sensing element:	Liquid filled copper bulb	
Pocket length:	142mm	
Pocket thread:	½" BSPT	
Pocket material:	Nickle plated brass	
Housing material:	Cover	ABS
	Base	Byblend
Ambient range:	Housing temp.	–35 to +65°C
	RH	0 to 95% non-condensing
Conformity:	CE marked	
Protection:	Auto reset	Types IM01 & 06 IP54
	Auto reset	Types IM08 & 10 IP65
	Manual reset	IP43
Dimensions:	Housing	108 x 70 x 72mm
Weight:	580g	

Part code	Description	Range
ST-IM01	Auto Reset Thermostat	0 to 90°C
ST-IM02	Auto Reset Thermostat	50 to 140°C
ST-IM03	Manual Reset Thermostat	0 to 60°C
ST-IM04	Manual Reset Thermostat	65 to 85°C
ST-IM05	Manual Reset Thermostat	90 to 110°C
ST-IM06	Auto Reset Dual Thermostat (2-stage)	0 to 90°C
ST-IM07	Auto Reset Dual Thermostat (2-stage) Man. Reset	65 to 85°C 30 to 90°C

Part code	Description	Range
ST-IM08	Auto Reset Thermostat	–30 to +30°C
ST-IM09	Manual Reset Thermostat	–30 to +30°C
ST-IM10	Auto Reset Thermostat	0 to 60°C
ST-IM13	Manual Reset Thermostat	20 to 90°C
ST-IM15	Manual Reset	50 to 120°C
	Accessory	
ST-IMM-PKT	Stainless steel pocket (optional)	

Data sheet: ST-IM.pdf

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ST-OS Wall Mount Thermostat

Our wall mounting Thermostats are suitable for industrial use. Typical applications are damp, dusty and strongly polluted areas and are ideally suited for greenhouse applications.

FEATURES

- IP65 Protection
- Single or 2-stage versions
- Robust housing

SPECIFICATION

Switch rating:	24 to 250Vac @ 15(8)A	
Sensing element:	Liquid filled coiled copper bulb	
Housing material:	Cover	ABS
	Base	Byblend
Ambient range:	Housing temp.	–35 to +65°C
	RH	0 to 95% non-condensing
Conformity:	CE marked	
Protection:	IP65	
Dimensions:	108 x 70 x 72mm	
Weight:	480g	

Part code	*Description*	*Range*
ST-OS01	Auto Reset Thermostat	–30 to +30°C
ST-OS02	Auto Reset Dual Thermostat (2-stage)	–30 to +30°C

Data sheet: ST-OS.pdf

ST-SS Strap-on Thermostats

Sontay's range of Strap-on Thermostats can be used to control the temperature of liquids and gases in a variety of applications where it is not possible to insert a pocket.

FEATURES

- Install in any position
- Easy adjustment of setpoint
- Setting indicator

SPECIFICATION

Switch rating:	SS01	250Vac @ 16(4)A
	SS03	24 to 250Vac @ 15(8)A
Sensing element:	Liquid filled copper element for contact	
Housing material:	Cover (SS01)	ABS
	Base (SS01)	Zinc steel plate
	Cover (SS03)	ABS
	Base (SS03)	Byblend
Ambient range:	Housing temp.	–35 to +65°C
	RH	0 to 95% non-condensing
Conformity:	CE marked	
Protection:	SS01	IP40
	SS03	IP65
Dimensions:	SS01	38 x 55 x 105mm
	SS03	108 x 70 x 72mm
Weight:	500g	

Part code	*Description*	*Range*
ST-SS01	IP40, Auto Reset Thermostat	20 to 90°C
ST-SS03	IP65, Auto Reset Thermostat	0 to 60°C

Data sheet: ST-SS.pdf

ST-TY Space Thermostats

The ST-TY series of wall mounting Space Thermostats are suitable for heating and/or cooling and frost protection applications.

FEATURES

- Tamperproof option
- Bi-metallic switch mechanism for reliability

COMMON SPECIFICATION

Operating voltage:	220/240Vac @ 50/60Hz	
Switching differential:	<1°K	
Switching current:	250Vac 10(2)A SPDT; 3(1)A SPST	
Sensor system:	Bi-metal	
Housing material:	ABS V0	
Ambient range:	50°C max.	
Protection:	IP20	
Dimensions:	ST-TY92C3T	78 x 78 x 36mm max.
	Others	82 x 82 x 32mm max.
Weights:	ST-TY92C3T	120g
	Others	220g

HEATING STAT SPECIFICATION – ST-TY92C1

Contact configuration:	SPST open-on-rise
Temperature range:	5 to 35°C

FROST STAT SPECIFICATION – ST-TY92C1F

Contact configuration:	SPST open-on-rise
Temperature range:	–5 to +15°C
Switching current:	250Vac @ 10(2)A

HEATING OR COOLING STAT SPECIFICATION – ST-TY92C3T & ST-TY92C3

Contact configuration:	SPDT
Temperature range:	5 to 35°C
Switching current:	250Vac @ 3(1)A

Part code	*Description*	*Range*
ST-TY92C1	Heating Thermostat	5 to 35°C
ST-TY92C1F	Frost Thermostat	–5 to +15°C
ST-TY92C3	Heating or Cooling Thermostat	5 to 35°C
ST-TY92C3T	Heating or Cooling Tamperproof	5 to 35°C

Data sheet: ST-TY.pdf

TT-518 Thimble Sensors

These low cost, direct output, Thimble Temperature Sensors are used for measuring air temperature in indoor spaces. Units contain either a high quality thermistor, Nickel or Platinum sensing element. The sensing element is mounted in an attractive 'thimble' enclosure for surface mounting, typically on a backplate or a ceiling tile.

FEATURE

- Plastic, brass, stainless steel or aluminium thimble options

SPECIFICATION

Output types:	Thermistor Resistive	
	Current	4 to 20mA
	Voltage	0 to 10Vdc
Thread:	Plastic	M16 x 1.5 x 25mm
	All others	M16 x 1.5 x 12mm
	Internal	11 x 20mm
Connections:	2m flying lead, screened	
Ambient range:	–10 to +60°C	
Protection:	IP30	
Dimensions:	Overall 45 x 22mm dia.	
Weight:	80g	

Part code	*Description*
	Suffixes (add to part code)
-AL	Aluminium thimble
-SS	Stainless steel thimble
-BR	Brass thimble
-BW	Brilliant white thimble
-5M	5m cable length

Part code	*Description*
	Passive Output
TT-518-A	10K3A1, Trend, Seachange, Cylon
TT-518-B	10K4A1, Andover, Delta Controls
TT-518-C	20K6A1, Honeywell
TT-518-D	PT100A, Serck
TT-518-E	PT1000A, Cylon
TT-518-F	Ni1000A, Sauter
TT-518-G	Ni1000A/TCR (LAN1), Siemens
TT-518-H	SAT1, Satchwell
TT-518-K	STA1, Landis & Staefa
TT-518-L	TAC1, TAC
TT-518-M	2.2K3A1, Johnson Controls
TT-518-N	3K3A1, Alerton
TT-518-P	30K6A1, Drayton
TT-518-Q	50K6A1, Ambiflex
TT-518-S	SAT2, Satchwell
TT-518-T	SAT3, Satchwell
TT-518-W	SIE1, Siebe
TT-518-Y	STA2, Landis & Staefa
TT-518-Z	10K NTC, Carel. Distech
	Active Output
TT-518-CVO	4-20mA/0-10Vdc selectable output * ***Output ranges:*** –10 to +40°C or –10 to +110°C (selectable)
TT-518-CVO-C	4-20mA/0-10Vdc selectable output (custom temp. scaling) *, Calibration to customer specification in the range of –10 to +60°C.

Data sheets: TT-518.pdf · TT-CVO.pdf

Note: If no colour is specified, standard off-white thimble will be supplied.
* These units are supplied with the transmitter in the plant housing.

TT-525 Duct Averaging Sensors

These low cost, direct output, Temperature Sensors are used for measuring temperature in ducts where an average reading across the air flow is required. Units contain either high quality thermistor, nickel or platinum sensing elements which are housed in an 8mm diameter 'Nylon 12' tube, spaced at 0.5m intervals along the standard 2.2m length.

SPECIFICATION

Output types:	Thermistor	Resistive
	Current	4 to 20mA
	Voltage	0 to 10Vdc
Probe:	Material	Nylon 12
	Dimensions	2.2m x 8mm dia.
Housing:	Material	ABS (flame retardant)
	Dimensions	55 x 90mm dia.
Ambient range:	–10 to +60°C	
Protection:	IP65	
Weight:	220g	

Part code	*Description*
	Active Output
TT-525-CVO	4-20mA/0-10Vdc selectable output, ***Output ranges:*** –10 to +40°C or –10 to +110°C (selectable)
TT-525-CVO-C	4-20mA/0-10Vdc selectable output (custom temp. scaling), Calibration to customer specification in the range of –10 to +60°C.
	Suffix (add to part code)
-5M	5m probe length

Part code	*Description*
	Passive Output
TT-525-A	10K3A1, Trend, Seachange, Cylon
TT-525-B	10K4A1, Andover, Delta Controls
TT-525-C	20K6A1, Honeywell
TT-525-D	PT100A, Serck
TT-525-E	PT1000A, Cylon
TT-525-F	Ni1000A, Sauter
TT-525-G	Ni1000A/TCR (LAN1), Siemens
TT-525-H	SAT1, Satchwell
TT-525-K	STA1, Landis & Staefa
TT-525-L	TAC1, TAC
TT-525-M	2.2K3A1, Johnson Controls
TT-525-N	3K3A1, Alerton
TT-525-P	30K6A1, Drayton
TT-525-Q	50K6A1, Ambiflex
TT-525-R	100K6A1, York >40°C
TT-525-S	SAT2, Satchwell
TT-525-T	SAT3, Satchwell
TT-525-W	SIE1, Siebe
TT-525-Y	STA2, Landis & Staefa
TT-525-Z	10K NTC, Carel, Distech

Data sheets: TT-525.pdf · TT-CVO.pdf

Note: Custom lengths available.

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TT-522 Duct Sensors

The TT-522 is a low cost, direct output, Temperature Sensor used to measure air temperature in ducts. Units contain either a high quality thermistor, nickel or platinum sensing element. The sensing element is fitted into a 150mm long brass probe with holes to allow air to flow directly over the sensing element. A flange plate is available for adjustment of penetration depth (order as TT-522-DFP).

SPECIFICATION

Output types:	Thermistor	Resistive
	Current	4 to 20mA
	Voltage	0 to 10Vdc
Probe:	Material	Brass
	Dimensions	150mm x 6mm dia.
Housing:	Material	ABS (flame retardant)
	Dimensions	55 x 90mm dia.
Ambient range:	–10 to +60°C	
Protection:	IP65	
Weight:	160g	

Part code	*Description*
	Active Output
TT-522-CVO	4-20mA/0-10Vdc selectable output, ***Output ranges:*** –10 to +40°C or –10 to +110°C (selectable)
TT-522-CVO-C	4-20mA/0-10Vdc selectable output (custom temp. scaling), Calibration to customer specification in the range of –10 to +60°C.
	Suffix (add to part code)
-250	250mm probe length
	Accessory
TT-522-DFP	Duct flange plate

Data sheets: TT-522.pdf · TT-CVO.pdf

Note: Custom lengths available.

Part code	*Description*
	Passive Output
TT-522-A	10K3A1, Trend, Seachange, Cylon
TT-522-B	10K4A1, Andover, Delta Controls
TT-522-C	20K6A1, Honeywell
TT-522-D	PT100A, Serck
TT-522-E	PT1000A, Cylon
TT-522-F	Ni1000A, Sauter
TT-522-G	Ni1000A/TCR (LAN1), Siemens
TT-522-H	SAT1, Satchwell
TT-522-K	STA1, Landis & Staefa
TT-522-L	TAC1, TAC
TT-522-M	2.2K3A1, Johnson Controls
TT-522-N	3K3A1, Alerton
TT-522-P	30K6A1, Drayton
TT-522-Q	50K6A1, Ambiflex
TT-522-R	100K6A1, York >40°C
TT-522-S	SAT2, Satchwell
TT-522-T	SAT3, Satchwell
TT-522-W	SIE1, Siebe
TT-522-Y	STA2, Landis & Staefa
TT-522-Z	10K NTC, Carel, Distech

Volume Price Breaks are applicable		
Unit Price (10-19 and 20+)		
TT-522-A	10K3A1	Please see price list
TT-522-B	10K4A1	
TT-522-C	20K6A1	
TT-522-D	PT100A	
TT-522-E	PT1000A	
TT-522-F	Ni1000A	
TT-522-G	Ni1000A/TCR	
TT-522-H	SAT1	
TT-522-K	STA1	
TT-522-L	TAC1	

TT-526 True Duct Averaging Sensors

The TT-526 True Duct Averaging Sensor contains a PT100B element, which measures at every instantaneous point along the full length of the 10mm diameter copper tube.

SPECIFICATION

Output types:	PT100B	Resistive
	Current	4 to 20mA
	Voltage	0 to 10Vdc
Probe:	Material	Copper
	Dimensions	2050mm (includes 50mm collar) x 1/4" dia.
Housing:	Material	ABS (flame retardant)
	Dimensions	55 x 90mm dia.
Ambient range:	–10 to +60°C	
Protection:	IP65	
Weight:	420g	

Part code	*Description*
	Passive Output
TT-526-PT100B	PT100B Thermistor Output
	Active Output
TT-526-CVO	4-20mA/0-10Vdc selectable output ***Output ranges:*** –10 to +40°C or –10 to +110°C (selectable)
TT-526-CVO-C	4-20mA/0-10Vdc selectable output(custom temp. scaling), Calibration to customer specification in the range of –10 to +60°C

Data sheets: TT-526.pdf · TT-CVO.pdf

TT-531 Outside Air Sensors

These low cost, direct output, Temperature Sensors are for measuring outside air temperature. Units contain either a high quality thermistor, Nickel or Platinum sensing element. The sensors are housed in IP65 rated enclosures. The TT-531 has a 10mm diameter brass cap containing the sensing element located externally in the shadow of the lid to curb the effects of solar gain, but should always be situated in a sheltered position on a north facing wall.

SPECIFICATION

Output types:	Thermistor	Resistive
	Current	4 to 20mA
	Voltage	0 to 10Vdc
Housing material:	ABS (flame retardant)	
Dimensions:	55 x 90mm dia.	
Ambient range:	–10 to +60°C	
Protection:	IP65	
Weight:	160g	

Volume Price Breaks are applicable		
Unit Price (10-19 and 20+)		
TT-531-A	10K3A1	Please see price list
TT-531-B	10K4A1	
TT-531-C	20K6A1	
TT-531-D	PT100A	
TT-531-E	PT1000A	
TT-531-F	Ni1000A	
TT-531-G	Ni1000A/TCR	
TT-531-H	SAT1	
TT-531-K	STA1	
TT-531-L	TAC1	

Part code	*Description*
	Passive Output
TT-531-A	10K3A1, Trend, Seachange, Cylon
TT-531-B	10K4A1, Andover, Delta Controls
TT-531-C	20K6A1, Honeywell
TT-531-D	PT100A, Serck
TT-531-E	PT1000A, Cylon
TT-531-F	Ni1000A, Sauter
TT-531-G	Ni1000A/TCR (LAN1), Siemens
TT-531-H	SAT1, Satchwell
TT-531-K	STA1, Landis & Staefa
TT-531-L	TAC1, TAC
TT-531-M	2.2K3A1, Johnson Controls
TT-531-N	3K3A1, Alerton
TT-531-P	30K6A1, Drayton
TT-531-Q	50K6A1, Ambiflex
TT-531-R	100K6A1, York >40°C
TT-531-S	SAT2, Satchwell
TT-531-T	SAT3, Satchwell
TT-531-V	SAT4, Satchwell
TT-531-W	SIE1, Siebe
TT-531-Y	STA2, Landis & Staefa
TT-531-Z	10K NTC, Carel, Distech
	Active Output
TT-531-CVO	4-20mA/0-10Vdc selectable output ***Output ranges:*** –10 to +40°C or –10 to +110°C (selectable)
TT-531-CVO-C	4-20mA/0-10Vdc selectable output (custom temp. scaling), Calibration to customer specification in the range of –10 to +60°C.

Data sheets: TT-531.pdf · TT-CVO.pdf

TT-532 Outside Air Sensors with Radiation Shield

Low cost, direct output, Temperature Sensors for measuring outside air temperature. Units contain either a high quality thermistor, nickel or platinum sensing element. The sensors are housed in IP65 rated enclosures. The TT-532 has the element fitted into a PTFE radiation shield, designed to provide fast response times to changes in outside air temperature and to protect the element from the effects of direct sunlight.

SPECIFICATION

Output types:	Thermistor	Resistive
	Current	4 to 20mA
	Voltage	0 to 10Vdc
Housing material:	ABS (flame retardant)	
Dimensions:	55 x 90mm dia.	
Ambient range:	–10 to +60°C	
Protection:	IP65	
Weight:	160g	

Part code	*Description*
	Active Output
TT-532-CVO	4-20mA/0-10Vdc selectable output
	Output ranges: –10 to +40°C or –10 to +110°C (selectable)
TT-532-CVO-C	4-20mA/0-10Vdc selectable output (custom temp. scaling), Calibration to customer specification in the range of –10 to +60°C

Part code	*Description*
	Passive Output
TT-532-A	10K3A1, Trend, Seachange, Cylon
TT-532-B	10K4A1, Andover, Delta Controls
TT-532-C	20K6A1, Honeywell
TT-532-D	PT100A, Serck
TT-532-E	PT1000A, Cylon
TT-532-F	Ni1000A, Sauter
TT-532-G	Ni1000A/TCR (LAN1), Siemens
TT-532-H	SAT1, Satchwell
TT-532-K	STA1, Landis & Staefa
TT-532-L	TAC1, TAC
TT-532-M	2.2K3A1, Johnson Controls
TT-532-N	3K3A1, Alerton
TT-532-P	30K6A1, Drayton
TT-532-Q	50K6A1, Ambiflex
TT-532-R	100K6A1, York >40°C
TT-532-S	SAT2, Satchwell
TT-532-T	SAT3, Satchwell
TT-532-V	SAT4, Satchwell
TT-532-W	SIE1, Siebe
TT-532-Y	STA2, Landis & Staefa
TT-532-Z	10K NTC, Carel, Distech

Data sheets – TT-532.pdf, TT-CVO.pdf

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TT-535 External Black Bulb Sensors

The TT-535 sensor is used for radiant heat in outdoor spaces. Black Bulb Temperature Sensors are used to calculate comfort temperature which is specified as the average of the conductive temperature and the radiant temperature. Units contain either a high quality thermistor, platinum or nickel sensing element.

$$\text{T comfort} = \frac{(\text{T radiant} + \text{T conductive})}{2}$$

SPECIFICATION

Output types:	Thermistor	Resistive
	Current	4 to 20mA
	Voltage	0 to 10Vdc
Ambient range:	–10 to +60°C	
Material:	Housing	ABS (flame retardant)
	Black bulb	Anodised aluminium
Dimensions:	Housing	55 x 90mm dia.
	Black bulb	17.5 x 37mm dia.
Protection:	IP65	
Weight:	160g	

Part code	*Description*
	Active Output
TT-535-CVO	4-20mA/0-10Vdc selectable output **Output ranges:** – 10 to +40°C or –10 to +110°C (selectable)
TT-535-CVO-C	4-20mA/0-10Vdc selectable output (custom temp. scaling), Calibration to customer specification in the range of –10 to +60°C.

Part code	*Description*
	Passive Output
TT-535-A	10K3A1, Trend, Seachange, Cylon
TT-535-B	10K4A1, Andover, Delta Controls
TT-535-C	20K6A1, Honeywell
TT-535-D	PT100A, Serck
TT-535-E	PT1000A, Cylon
TT-535-F	Ni1000A, Sauter
TT-535-G	Ni1000A/TCR (LAN1), Siemens
TT-535-H	SAT1, Satchwell
TT-535-K	STA1, Landis & Staefa
TT-535-L	TAC1, TAC
TT-535-M	2.2K3A1, Johnson Controls
TT-535-N	3K3A1, Alerton
TT-535-P	30K6A1, Drayton
TT-535-Q	50K6A1, Ambiflex
TT-535-S	SAT2, Satchwell
TT-535-T	SAT3, Satchwell
TT-535-W	SIE1, Siebe
TT-535-Y	STA2, Landis & Staefa
TT-535-Z	10K NTC, Carel, Distech

Data sheets: TT-535.pdf · TT-CVO.pdf

Note: See page 59 for Space Black Bulb Sensors.

TT-541 Immersion Sensors

These Immersion Sensors are used for measuring the temperature of liquids in pipework. Units contain either a high quality thermistor, nickel or platinum element.

The TT-541 sensing element is housed in a 150mm long brass probe fitted to an IP65 rated enclosure, for direct mounting into a TT-PO521 or TT-PO-HP stainless steel pocket.

SPECIFICATION

Output types:	Thermistor	Resistive
	Current	4 to 20mA
	Voltage	0 to 10Vdc
Housing material:	ABS (flame retardant)	
Dimensions:	55 x 90mm dia.	
Probe:	Material	Brass
	Dimensions	150 x 6mm dia.
Ambient range:	–10 to +60°C	
Protection:	IP65	
Weight:	160g	

Volume Price Breaks are applicable		
Unit Price (10-19 and 20+)		
TT-541-A	10K3A1	Please see price list
TT-541-B	10K4A1	
TT-541-C	20K6A1	
TT-541-D	PT100A	
TT-541-E	PT1000A	
TT-541-F	Ni1000A	
TT-541-G	Ni1000A/TCR	
TT-541-H	SAT1	
TT-541-L	TAC1	

Notes: ***1.*** Custom lengths available.
2. Immersion pockets – please see next column.

Part code	*Description*
	Passive Output
TT-541-A	10K3A1, Trend, Seachange, Cylon
TT-541-B	10K4A1, Andover, Delta Controls
TT-541-C	20K6A1, Honeywell
TT-541-D	PT100A, Serck
TT-541-E	PT1000A, Cylon
TT-541-F	Ni1000A, Sauter
TT-541-G	Ni1000A/TCR (LAN1), Siemens
TT-541-H	SAT1, Satchwell
TT-541-L	TAC1, TAC
TT-541-M	2.2K3A1, Johnson Controls
TT-541-N	3K3A1, Alerton
TT-541-P	30K6A1, Drayton
TT-541-Q	50K6A1, Ambiflex
TT-541-R	100K6A1, York >40°C
TT-541-S	SAT2, Satchwell
TT-541-T	SAT3, Satchwell
TT-541-W	SIE1, Siebe
TT-541-Y	STA2, Landis & Staefa
TT-541-Z	10K NTC, Carel, Distech
	Active Output
TT-541-CVO	4-20mA/0-10Vdc selectable output ***Output ranges:*** *–10 to +40°C or –10 to +110°C (selectable)*
TT-541-CVO-C	4-20mA/0-10Vdc selectable output (custom temp. scaling), *Calibration to customer specification in the range of –10 to +60°C*
	Suffix (add to part code)
-250	250mm probe length

Data sheets: TT-541.pdf · TT-CVO.pdf

TT-542 High Temperature Immersion Sensors

The TT-542 is for use in high temperature applications up to 400°C. The sensor consists of a stainless steel probe fitted to an aluminium head, and connected by a 1m cable to a plant housing where terminations and transmitters are located. The TT-542 is available in two standard probe lengths of 150mm or 250mm, for direct mounting into a TT-PO521 or TT-PO-HP stainless steel pocket.

SPECIFICATION

Output types:	RTD	Resistive
	Current	4 to 20mA
	Voltage	0 to 10Vdc
Housing material:	ABS (flame retardant)	
Dimensions:	55 x 90mm dia.	
Probe:	Material	Stainless steel
	Dimensions	150 or 250 x 6mm dia.
Ambient range:	Housing	–10 to +60°C
	Probe	–10 to +400°C
Protection:	IP65	
Weight:	340g	

Part code	*Description*
	Passive Output (150mm Probe)
TT-542-D	PT100A Sensor
TT-542-E	PT1000A Sensor
	Active Output (150mm Probe)
TT-542-CVO	4-20mA/0-10Vdc selectable output ***Output ranges:*** –10 to +40°C, –10 to +110°C –10 to +160°C or 0 to +400°C (selectable)
TT-542-CVO-C	4-20mA/0-10Vdc selectable output (custom temp. scaling), *Calibration to customer specification in the range of –10 to +400°C.*

Part code	*Description*
	Suffix (add to part code)
-250	250mm probe length

Data sheets: TT-542.pdf · TT-CVO.pdf

Note: Immersion pockets – please see below.

TT-PO Immersion Sensor Pockets

NEW for 2012

TT-PO-HP

TT-PO521

TT-PO521 and TT-PO-HP range of Stainless Steel Pockets are for use with immersion sensors TT-541 and TT-542. The two part welded TT-PO521 pockets are intended for low flow applications.

They may be used in applications such as sumps or storage tanks or low flowing water in pipes. For applications requiring installation in flowing water, the TT-PO-HP should be used.

Pockets are designed to accept 150 x 6mm dia. probes, which are locked in position by a grub screw.

These pockets can be installed in any system that is constructed from compatible materials whose operating pressures and flow rates are within the specified ranges.

SPECIFICATION

Material:	S/S 316	
Temperature ranges:	–20 to +400°C	
Maximum pressure (out to in):	16 bar	
Water velocity max.(0 to100°C):	TT-PO521	3.7 m/s
	TT-PO521-250	1.7 m/s
	TT-PO-HP	17.0 m/s
	TT-521-HP-250	6.5 m/s
Weight:	TT-PO521	140g
	TT-PO-HP	220g

Part code	*Description*
	150mm Pockets
TT-PO521	Stainless Steel Immersion Pocket
TT-PO-HP	High Performance Stainless Steel Immersion Pocket
	250mm Pockets
TT-PO521-250	Stainless Steel Immersion Pocket
TT-PO-HP-250	High Performance Stainless Steel Immersion Pocket

Volume Price Breaks are applicable	
Unit Price (10-19 and 20+)	
TT-PO521	Please see price list
TT-PO-HP	

Data sheet: TT-PO.pdf

Note: Custom lengths available.

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TT-551 Strap-on Sensors

The TT-551 is used to measure pipe temperature, and contain either a high quality thermistor, nickel or platinum element, which is housed in a 50mm long brass probe with two metres of PTFE 2-core screened cable as standard connecting the probe to an IP65 housing for termination.

SPECIFICATION

Output types:	Thermistor	Resistive
	Current	4 to 20mA
	Voltage	0 to 10Vdc
Housing material:	ABS (flame retardant)	
Dimensions:	55 x 90mm dia.	
Cable length:	2 metre (standard)	
Ambient range:	–10 to +60°C	
Protection:	IP65	
Weight:	200g	

Part code	*Description*
	Suffixes (add to part code)
-5M	5m cable length
-R	Brass lug potted

Volume Price Breaks are applicable

Unit Price (10-19 and 20+)		Please see price list	
TT-551-A	10K3A1	**TT-551-F**	Ni1000A
TT-551-B	10K4A1	**TT-551-G**	Ni1000A/TCR
TT-551-C	20K6A1	**TT-551-H**	TAC1
TT-551-D	PT100A	**TT-551-L**	TAC1
TT-551-E	PT1000A		

Part code	*Description*
	Passive Output
TT-551-A	10K3A1, Trend, Seachange, Cylon
TT-551-B	10K4A1, Andover, Delta Controls
TT-551-C	20K6A1, Honeywell
TT-551-D	PT100A, Serck
TT-551-E	PT1000A, Cylon
TT-551-F	Ni1000A, Sauter
TT-551-G	Ni1000A/TCR (LAN1), Siemens
TT-551-H	SAT1, Satchwell
TT-551-L	TAC1, TAC
TT-551-M	2.2K3A1, Johnson Controls
TT-551-N	3K3A1, Alerton
TT-551-P	30K6A1, Drayton
TT-551-Q	50K6A1, Ambiflex
TT-551-R	100K6A1, York >40°C
TT-551-S	SAT2, Satchwell
TT-551-T	SAT3, Satchwell
TT-551-W	SIE1, Siebe
TT-551-Y	STA2, Landis & Staefa, Distech
TT-551-Z	10K NTC, Carel, Distech
	Active Output
TT-551-CVO	4-20mA/0-10Vdc selectable output ***Output ranges:*** –10 to +40°C or –10 to +110°C (selectable)
TT-551-CVO-C	4-20mA/0-10Vdc selectable output (custom temp. scaling), Calibration to customer specification in the range of –10 to +60°C.

Data sheets: TT-551.pdf · TT-CVO.pdf

TT-555 Flying Lead Sensors

The TT-555 is a direct output temperature Sensor used to measure air temperature, especially in fan-coil units etc., and contain either a high quality thermistor, nickel or platinum sensing element. suitable for the range –10 to +60°C. The standard cable length is two metres of 2-core screened cable. Longer lengths can be made to order.

SPECIFICATION

Output types:	Thermistor	Resistive
	Current	4 to 20mA
	Voltage	0 to 10Vdc
Probe material:	Acetyl	
Probe dimensions:	25 x 6mm dia.	
Ambient range:	–10 to +60°C	
Protection:	IP65	
Weight:	80g	

Volume Price Breaks are applicable

Unit Price (10-19 and 20+)		Please see price list	
TT-555-A	10K3A1	**TT-555-F**	Ni1000A
TT-555-B	10K4A1	**TT-555-G**	Ni1000A/TCR
TT-555-C	20K6A1	**TT-555-H**	SAT1
TT-555-D	PT100A	**TT-555-L**	TAC1
TT-555-E	PT1000A		

Part code	*Description*
	Suffixes (add to part code)
-5M **	5m cable length
-R	Cap potted (waterproof)

Note: Custom lengths available.
* These units are supplied with the transmitter in the plant housing.
** Volume price breaks available on application.

Part code	*Description*
	Passive Output
TT-555-A	10K3A1, Trend, Seachange, Cylon
TT-555-B	10K4A1, Andover, Delta Controls
TT-555-C	20K6A1, Honeywell
TT-555-D	PT100A, Serck
TT-555-E	PT1000A, Cylon
TT-555-F	Ni1000A, Sauter
TT-555-G	Ni1000A/TCR (LAN1), Siemens
TT-555-H	SAT1, Satchwell
TT-555-K	STA1, Landis & Staefa
TT-555-L	TAC1, TAC
TT-555-M	2.2K3A1, Johnson Controls
TT-555-N	3K3A1, Alerton
TT-555-P	30K6A1, Drayton
TT-555-Q	50K6A1, Ambiflex
TT-555-S	SAT2, Satchwell
TT-555-T	SAT3, Satchwell
TT-555-W	SIE1, Siebe
TT-555-Y	STA2, Landis & Staefa
TT-555-Z	10K NTC, Carel, Distech
	Active Output
TT-555-CVO	4-20mA/0-10Vdc selectable output * ***Output ranges:*** –10 to +40°C or –10 to +110°C (selectable)
TT-555-CVO-C	4-20mA/0-10Vdc selectable output (custom temp. scaling) *, Calibration to customer specification in the range of –10 to +60°C.

Data sheets: TT-555.pdf · TT-CVO.pdf

Introduction to Space Temperature Sensing

We now have two offerings in our space temperature sensor range.

The traditional TT-911 has been an extremely popular space temperature sensor in the HVAC market for the past 10 years but as times and tastes change we have taken all that is good about the TT-911 and included it in our re-designed TT-1000 space temperature sensor.

The TT-1000 housing was designed with input from our customers into what they thought would be fitting into the industry now and in the future and the look of the sensor reflects this.

It is sleek and modern looking but unobtrusive enough to not dominate in the décor of the building.

We understand that there may still be a requirement for the older TT-911 sensor in maintenance projects and where this specific sensor is specified so we have continued to include it in our catalogue range.

If you would like to see a sample of the new housing please contact Customer Services or your Account Manager who can arrange this for you.

TT-911 Space Sensors

A ROBUST AND RELIABLE DIRECT OUTPUT SENSOR FOR AIR TEMPERATURE

The TT-911 is a Direct Output Temperature Sensor used for measuring air temperature in a room environment.

See page 60 for details on Sontay's UI-500 series or call our Customer Service Team for more information.

SPECIFICATION

Output types:	Thermistor	Resistive
	Current	4 to 20mA
	Voltage	0 to 10Vdc
Set-point:	1 to 11kΩ	
Fan speed:	Resistive	
Latching switch:	SPDT	
Momentary switch:	N/O push button	
Housing:	Material	ABS (flame retardant)
	Colour	Off-white
Ambient range:	–10 to +60°C	
Protection:	IP30	
Dimensions:	85 x 85 x 23mm	
Weight:	120g	

Part code	*Description*
	Passive Output
TT-911-A	10K3A1, Trend, Seachange, Cylon
TT-911-B	10K4A1, Andover, Delta Controls
TT-911-C	20K6A1, Honeywell
TT-911-G	Ni1000A/TCR (LAN1), Siemens
TT-911-H	SAT1, Satchwell
TT-911-L	TAC1, TAC
TT-911-N	3K3A1, Alerton
TT-911-P	30K6A1, Drayton
TT-911-Z	10K NTC, Carel, Distech
	Active Output
TT-911-CVO	4-20mA/0-10Vdc selectable output
TT-911-CVO-C	4-20mA/0-10Vdc selectable output (custom temp. scaling)
TT-911-CVO-SP	4-20mA/0-10Vdc selectable output with setpoint
TT-911-CVO-SP-C	4-20mA/0-10Vdc selectable output with setpoint (custom temp. scaling) ***Output ranges:*** –10 to +40°C or –10 to +110°C (selectable), Calibration to customer specification in the range of –10 to +60°C.

Part code	*Description*
	Interface Options
-SP	2-wire, 1-11kΩ setpoint
-FS3	3-speed fan switch
-FS4	4-speed fan switch
-FS5	5-speed fan switch
-LS	Latching switch
-MS	Momentary switch

Data sheets: TT-911.pdf · TT-CVO.pdf

Notes:

1. No further options are available other than a setpoint if a 4-20mA, 0-10Vdc output temperature transmitter is fitted.

2. A Sensor Guard (TT-GD) is available – see page 59.

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TT-1000 Space Sensors

A NEW ERA IN SPACE TEMPERATURE SENSOR DESIGN

This range of innovative Space Sensors is designed to meet the exacting standards of today's architects, specifiers and building owners. Its unique low profile, curved style allows it to blend seamlessly in to the architecture of modern and older buildings alike.

Matched to high quality sensors, multi-fit rear fixing plate and soon to be released LCD display module, elevates this sensor to the next level in room sensor design.

As with its predecessor the TT-1000 range can be supplied with a wide range of user interface options such as set-point adjustment, fan speed and momentary switches etc. to give the customer additional functionality. Sontay also offers a complete range of customised user interfaces for every requirement.

See page 60 for details on Sontay's UI-500 series or call our Customer Service Team for more information.

INTERFACE OPTIONS

SP

Set temperature to desired point
Setpoint

FS 3/4/5

Fan Speed Switch
Select fan speed

MS

Momentary Switch
Override the programm for a period of time

FEATURES

- Designed to be aesthetically pleasing
- Blends into the fabric of any building
- Developed using customer feedback and involvement
- Meets exacting standards of today's specifiers

SPECIFICATION

Output types:	Thermistor Resistive	
Set-point:	1 to 11kΩ	
Fan speed:	Resistive	
Momentary switch:	N/O push button	
Housing:	Material	ABS (flame retardant)
	Colour	Polished white finish
Ambient range:	–10 to +60°C	
Protection:	IP30	
Dimensions:	115 x 85 x 28mm	
Weight:	120g	

Part code	*Description*
	Passive Output
TT-1000-A	10K3A1, Trend, Seachange, Cylon
TT-1000-B	10K4A1, Andover, Delta Controls
TT-1000-C	20K6A1, Honeywell
TT-1000-D	PT100A, Serck
TT-1000-E	PT1000A, Cylon
TT-1000-F	Ni1000A, Sauter
TT-1000-G	Ni1000A/TCR (LAN1), Siemens
TT-1000-H	SAT1, Satchwell
TT-1000-K	STA1, Landis & Staefa
TT-1000-L	TAC1, TAC
TT-1000-M	2.2K3A1, Johnson Controls
TT-1000-N	3K3A1, Alerton
TT-1000-P	30K6A1, Drayton
TT-1000-Q	50K6A1, Ambiflex
TT-1000-S	SAT2, Satchwell
TT-1000-T	SAT3, Satchwell
TT-1000-W	SIE1, Siebe
TT-1000-Y	STA2, Landis & Staefa
TT-1000-Z	10K NTC, Carel, Distech

Volume Price Breaks are applicable		
Unit Price (10-19 and 20+)		
TT-1000-A	10K3A1	Please see price list
TT-1000-B	10K4A1	
TT-1000-C	20K6A1	
TT-1000-D	PT100A	
TT-1000-E	PT1000A	
TT-1000-F	Ni1000A	
TT-1000-G	Ni1000A/TCR	
TT-1000-H	SAT1	
TT-1000-K	STA1	
TT-1000-L	TAC1	

Part code	*Description*
	Interface Options *
-SP	2-wire, 1-11kΩ setpoint
-FS3	3-speed fan switch
-FS4	4-speed fan switch
-FS5	5-speed fan switch
-MS	Momentary switch

Data sheet: TT-1000.pdf

* Interface options are not applicable to 'Volume Price Breaks'.

TT-GD Space Sensor Guard

The TT-GD is designed to protect TT-911, TT-915 and TT-1000 temperature sensors from accidental damage.

FEATURES

- Robust construction
- Easy fixing

SPECIFICATION

Material:	Powder coated mild steel
Dimensions:	122 x 110 x 55mm
Fixing centres:	4 x 4.2mm Ø on centres 112mm (w) x 84mm (d)
Weight:	180g

Part code	*Description*
TT-GD	Space Sensor Guard

Data sheet: TT-GD.pdf

TT-915 Black Bulb Sensors

Comfort temperature measurement can be best achieved by taking into account the radiant effect of surfaces within the controlled space. The comfort temperature is specified as the average of the conductive temperature and the radiant temperature.

$$\text{T comfort} = \frac{\text{T radiant} + \text{T conductive}}{2}$$

The TT-915 is a low cost Black Bulb Temperature Sensor used to measure radiant heat in indoor spaces. Units contain either a high quality thermistor or Platinum element.

SPECIFICATION

Output types:	Thermistor Resistive	
	Current	4 to 20mA
	Voltage	0 to 10Vdc
Ambient range:	–10 to +60°C	
Protection:	IP30	
Material:	Housing	ABS (flame retardant)
Black bulb:	Anodised aluminium	
Dimensions:	Housing	85 x 85 x 23mm
	Bulb	17.5 x 37mm dia.
Weight:	120g	

Part code	*Description*
	Passive Output
TT-915-A	10K3A1, Trend, Seachange, Cylon
TT-915-B	10K4A1, Andover, Delta Controls
TT-915-C	20K6A1, Honeywell
TT-915-D	PT100A, Serck
TT-915-E	PT1000A, Cylon
TT-915-F	Ni1000A, Sauter
TT-915-G	Ni1000A/TCR (LAN1), Siemens
TT-915-H	SAT1, Satchwell
TT-915-K	STA1, Landis & Staefa
TT-915-L	TAC1, TAC
TT-915-M	2.2K3A1, Johnson Controls
TT-915-N	3K3A1, Alerton
TT-915-P	30K6A1, Drayton
TT-915-Q	50K6A1, Ambiflex
TT-915-S	SAT2, Satchwell
TT-915-T	SAT3, Satchwell
TT-915-W	SIE1, Siebe
TT-915-Y	STA2, Landis & Staefa
TT-915-Z	10K NTC, Carel, Distech

Volume Price Breaks are applicable		
Unit Price (10-19 and 20+)		
TT-915-A	10K3A1	Please see price list
TT-915-B	10K4A1	
TT-915-C	20K6A1	
TT-915-D	PT100A	
TT-915-E	PT1000A	
TT-915-F	Ni1000A	
TT-915-G	Ni1000A/TCR	
TT-915-H	SAT1	
TT-915-K	STA1	
TT-915-L	TAC1	

Part code	*Description*
	Active Output
TT-915-CVO	4-20mA/0-10Vdc selectable output **Output ranges:** –10 to +40°C or –10 to +110°C (selectable)
TT-915-CVO-C	4-20mA/0-10Vdc selectable output (custom temp. scaling), Calibration to customer specification in the range of –10 to +60°C
	Interface Options *
-SP	2-wise 1-11kΩ setpoint

Data sheets: TT-915.pdf · TT-CVO.pdf

Notes:
1. A Sensor Guard (TT-GD) is available – see above.
2. See page 54 for External Black Bulb Sensors.

UI-500 Interface Options

INDIVIDUAL SOLUTIONS

In addition to our standard range of sensors we are able to manufacture user interface equipment to your specifications. Typically this would be a single or twin gang plate styled to match other equipment on a project. We can fit a large range of devices to UI-500 products including sensors, setpoint adjustments and LCDs.

The examples on this page are just a few of the types, designs and options we can supply. Please contact the Customer Service Team for more information or to discuss your requirements.

UI-AA Alarm Annunciators

The UI-AA series are used in conjunction with one or two analogue or VFC signals to provide low cost local audible and visual alarm facilities. The units can accept voltage, current and VFC switched inputs.

Adjustment of alarm threshold and the time delay before an alarm is standard on all models.

A mute button silences the audible alarm, whilst the visual alarm will not reset until the monitored parameter returns to within its desired range.

FEATURES

- 1 or 2-channels
- LEDs for OK/alarm indication
- Audible alarm mute button
- Alarm output relay

SPECIFICATION

Input signals:	UI-AA1-F	0-10Vdc, 4-20mA, relay or 24Vac
	UI-AA2-F	0-10Vdc, 4-20mA or relay
Alarm delay time (sec):	5 to 45 secs	
Relay output:	SPCO, 6A @ 240Vac	
Buzzer output:	85dB @ 1 metre	
LED indication:	Green = OK, flashing red = alarm	
Power supply:	24Vac/dc ±15%	
Housing:	UI-AA1-F	Panel mounting or UK standard single gang box
	UI-AA2-F	For panel mounting only or deep UK standard double gang box
Ambient range:	–10 to +40°C	
Protection:	IP32	
Dimensions:	UI-AA1-F	85 x 85 x 37mm
	UI-AA2-F	145 x 85 x 35mm
Weight:	UI-AA1-F	140g
	UI-AA2-F	200g

Part code	*Description*
UI-AA1-F	1-channel Interface Panel
UI-AA2-F	2-channel

Data sheets: UI-AA1-F.pdf · UI-AA2-F.pdf

VA Damper Actuators

NEW for 2012

5Nm Types

5Nm & 15Nm Types

20Nm & 30Nm Types

Sontay's new range of Damper Actuators are suitable for many applications including motorized control of dampers in ventilation systems.

They are available with either on/off, floating (raise/lower) or modulating control signal input and various torque ratings. A failsafe damper actuator is also available in a 20Nm torque rating.

All units and can have optional auxiliary switch(es) fitted and the direction of rotation can be reversed and the angle of mechanical travel can be limited.

FEATURES

- Position indication
- Maintenance-free
- Mechanical set rotation limits
- Reversible rotation

SPECIFICATION

Power supply:	24Vac @ 50/60Hz or 24Vdc ±20%	
	80 to 265Vac @ 50/60Hz	
Drive times (seconds):	5, 8 & 15Nm - 60 to 120	
	15Nm - <150 (spring-return <20)	
	20Nm - 150, 30Nm - 150	
Control signals:	On/off, raise/lower and modulating	
Aux. switch rating:	250V @ 5(2.5)A	
Angle of rotation:	Max. 59° (mechanically limitable)	
Ambient:	Temperature	-20 to +50°C
	Humidity	5 to 95% RH
Protection:	5Nm	IP42
	Others	IP54 (cable downwards)
Dimensions (L x W x H):	VA-05	145 x 65 x 61mm
	VA-08 & 15	115 x 65 x 61mm
	VA-20 & 30	193 x 96 x 60
	VA-F	250 x 96 x 60
Weights:	VA-05	0.5kg
	VA-08 & 15	0.53kg
	VA-20 & 30	1.7kg
	VA-F	2.5kg

General Note for Torque Requirement

For air dampers the following rule of thumb can be used in the absence of damper manufacturers' guidelines.

Torque	*Duct area*
5Nm	Up to 1m²
8Nm	Up to 1.6m²
15Nm	Up to 3m²
20Nm	Up to 4m²
30Nm	Up to 6m²

Part code	*Description*
	5Nm Actuators
VA-05A-24	24V On/off, raise/lower
VA-05A-24S	24V On/off, raise/lower with auxiliary switches
VA-05A-230	230V On/off, raise/lower
VA-05A-230S	230V On/off, raise/lower with auxiliary switches
VA-05M-24	24V Modulating
	8Nm Actuators
VA-08A-24	24V On/off, raise/lower
VA-08A-24S	24V On/off, raise/lower with auxiliary switch
VA-08A-230	230V On/off, raise/lower
VA-08A-230S	230V On/off, raise/lower with auxiliary switch
VA-08M-24	24V Modulating
VA-08M-24S	24V Modulating with auxiliary switch
	15Nm Actuators
VA-15A-24	24V On/off, raise/lower
VA-15A-24S	24V On/off, raise/lower with auxiliary switch
VA-15A-230	230V On/off, raise/lower
VA-15A-230S	230V On/off, raise/lower with auxiliary switch
VA-15M-24	24V Modulating
VA-15M-24S	24V Modulating with auxiliary switch

Part code	*Description*
	20Nm Actuators
VA-20A-24S	24V On/off, raise/lower with auxiliary switches
VA-20A-230S	230V On/off, raise/lower with auxiliary switches
VA-20M-24S	24V Modulating with auxiliary switches
	30Nm Actuators
VA-30A-24	24V On/off, raise/lower
VA-30A-24S	24V On/off, raise/lower with auxiliary switches
VA-30A-230S	230V On/off, raise/lower with auxiliary switches
VA-30M-24S	24V Modulating with auxiliary switches
	Failsafe Actuators (20Nm)
VA-FA-24	24V On/off
VA-FA-24S	24V On/off with auxiliary switches
VA-FA-230	230V On/off
VA-FA-230S	230V On/off with auxiliary switches
VA-FM-24	24V Modulating
VA-FM-24S	24V Modulating with auxiliary switches

Data sheets: VA-05.pdf · VA-08.pdf · VA-15.pdf · VA-20.pdf VA-30.pdf · VA-FA.pdf

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VA-D Damper Actuators

4Nm Types

8Nm to 32Nm Types

Failsafe Actuators

The VA-D range of Damper Actuators, require a 24Vac/dc or 230Vac supply and are available with either on/off, floating (raise/lower) or modulating control signal input.

They are available in 4, 8, 16, 24 or 32Nm torque ratings, failsafe damper actuators are available in a 15Nm torque rating, the spring-return operates when the supply voltage is removed.

All units and can have optional auxiliary switches fitted and the direction of rotation can be reversed and the angle of mechanical travel can be limited.

FEATURES

- Reversible rotation
- Mechanical set rotation limits
- Automatic shut-off at end position (overload switch)

SPECIFICATION

Power supply:	24Vac @ 50-60Hz or 24Vdc	
	230Vac ±20% @ 50-60Hz	
Drive times (seconds):	4Nm - 35, 8Nm - 30, 16Nm - 80	
	15Nm - 75 (spring-return 20)	
	24Nm - 125, 32Nm - 140	
Control signals:	On/off, raise/lower and modulating	
Aux. switch rating:	230V @ 3(1.5)A	
Angle of rotation:	5 to 85° (mechanically limitable)	
Ambient:	Temperature	-20 to +50°C
	Humidity	5 to 95% RH
Protection:	4Nm	IP44
	Others	IP44 (cable downwards)
	Failsafe	IP54
Dimensions (L x W x H):	4Nm	146 x 85 x 65mm
	Others	180 x 100 x 67mm
	Failsafe	249.5 x 101 x 78mm
Weights:	4Nm	0.9kg
	Others	1.5kg max.
	Failsafe	2.3kg

Part code	*Description*
	4Nm Actuators
VA-DAN1E	24V On/off, raise/lower
VA-DAN1.SE	24V On/off, raise/lower with auxiliary switches
VA-DAN2E	230V On/off, raise/lower
VA-DAN2.SE	230V On/off, raise/lower with auxiliary switches
VA-DMN1.1E	24V Modulating
	8Nm Actuators
VA-DAS1E	24V On/off, raise/lower
VA-DAS1.SE	24V On/off, raise/lower with auxiliary switches
VA-DAS2E	230V On/off, raise/lower
VA-DAS2.SE	230V On/off, raise/lower with auxiliary switches
VA-DMS1.1E	24V Modulating
VA-DMS1.1SE	24V Modulating with auxiliary switches
VA-DMS.2SE	230V Modulating with auxiliary switches
	16Nm Actuators
VA-DA1E	24V On/off, raise/lower
VA-DA1.SE	24V On/off, raise/lower with auxiliary switches
VA-DA2E	230V On/off, raise/lower
VA-DA2.SE	230V On/off, raise/lower with auxiliary switches
VA-DM1.1E	24V Modulating
VA-DM1.1SE	24V Modulating with auxiliary switches

Part code	*Description*
	24Nm Actuators
VA-DAL1.SE	24V On/off, raise/lower with auxiliary switches
VA-DAL2.SE	230V On/off, raise/lower with auxiliary switches
VA-DML1.1SE	24V Modulating with auxiliary switches
	32Nm Actuators
VA-DAG1E	24V On/off, raise/lower
VA-DAG1.SE	24V On/off, raise/lower with auxiliary switches
VA-DAG2.SE	230V On/off, raise/lower with auxiliary switches
VA-DMG1.1SE	24V Modulating with auxiliary switches
	Failsafe Actuators (15Nm)
VA-DA1.FE	24V On/off
VA-DA1.FSE	24V On/off with auxiliary switches
VA-DA2.FE	230V On/off
VA-DA2.FSE	230V On/off with auxiliary switches

Data sheets: VA-DAE.pdf · VA-DANE.pdf · VA-DME.pdf
VA-DMN1.1E.pdf · VA-DA.FE.pdf · VA-FM.pdf

VB-W Butterfly Valve Bodies

The VB-W Series is a range of high specification flangeless, wafer type, butterfly valves capable of tight shut-off. To achieve this high level of sealing, relatively high torque actuators are required to break away from the close position.

They are capable of a temperature range of –40 to +110°C and a valve shut-off pressure up to 16bar dependent on the actuator used.

SPECIFICATION

Type:	Flangeless wafer, rubber lined			
Function:	Isolating or regulating			
Installation:	Clamping between two flanges			
To suit flanges:	PN6, PN10, PN16			
Valve shut-off pressures:	6 bar, 10 bar, 16 bar			
	Note: The shut-off pressure must be specified at the time of ordering.			
Standard materials:	Body	Cast iron GG25		
	Shaft	Stainless steel 431		
	Disc	Stainless steel 431		
	Pin	Stainless steel 431		
Lining:	Type	Min.	Max.	Media Type
	EPDM	–40°C	+110°C	Water, weak acids
Weight:	8.8kg max.			

OPERATING TORQUES

Valve DN (mm)	*Differential Pressure (Torque required (Nm))*		
	6 bar	***10 bar***	***16 bar***
50	10	10	11
65	13	14	15
80	18	19	21
100	30	32	36
125	42	46	52
150	67	75	86
200	130	140	160

Part code	Description
	Butterfly Valve Bodies
VB-W50	50mm, 95 Kvs Valve
VB-W65	65mm, 231 Kvs Valve
VB-W80	80mm, 491 Kvs Valve
VB-W100	100mm, 690 Kvs Valve
VB-W125	125mm, 1450 Kvs Valve
VB-W150	150mm, 1945 Kvs Valve
VB-W200	200mm, 4095 Kvs Valve
	Linkages
VB-LK1	50 to 80mm, 16 to 32Nm Linkage Kit
VB-LK2	100 to 125mm, 16 to 32Nm Linkage Kit
VB-LK3	50 to 65mm, Failsafe Linkage Kit
VB-LKU1	VB-W100 / VB-UNIC10/15 Linkage
VB-LKU2	VB-W125 / VB-UNIC10/15 Linkage
VB-LKU3	VB-W150 / VB-UNIC10/30 Linkage
VB-LKU4	VB-W200 / VB-UNIC20 Linkage
VB-LKN4	VB-W200 / VB-NUCOM10NM Linkage

Data sheet: VB-W.pdf

Note: For full close-off pressure torque requirements – please refer to datasheet or Sontay's website for full actuator close-off pressure tables. For actuators please refer to previous page and next column.

OPERATING TORQUES

Note: The operating torques shown above are valid ONLY for the following conditions:

- The fluid is water without solid particles, and at a temperature of 1 to 80°C.
- The water does not contain contaminants which may increase the friction between the seating surfaces.
- There is at least one operation cycle per month.
- Flow velocity in the pipe is not more than 4 m/s.

VB-UNIC Larger Butterfly Valve Actuators

This range of actuators is suitable for larger VB-W butterfly valves (150 and 200mm).

They are compact and powerful units with a manual override lever and end switches (VB-UNIC) or 4-20mA feed-back (VB-NUCOM) fitted as standard.

FEATURES

- Maintenance free operation
- Position indicator
- Manual operation

SPECIFICATION

Power supply:	24Vac, 24Vdc or 230Vac	
Power consumption:	VB-UNIC10	80W
	VB-UNIC20	75W
	VB-NUCOM10NS	80W
	VB-NUCOM10NM	200W
Output Torque:	VB-UNIC10-15	49Nm
	VB-UNIC10-30	98Nm
	VB-UNIC20	196Nm
	VB-NUCOM10NS-15	49Nm
	VB-NUCOM10NS-30	98Nm
	VB-NUCOM10NM-15	196Nm
Control Signals:	VB-UNIC	On/Off
	VB-NUCOM	4-20mA
Ambient:	Temperature	–25 to +55°C
	RH	5 to 95% RH
Protection:	IP65	
Dimensions:	VB-UNIC10 & VB-NUCOMNS 207.5 x 130 x 122.5mm	
	VB-UNIC20 & VB-NUCONM 256.5 x 141.5 x 156.5mm	
Weight:	9kg max.	

Part code	*Description*
	On/Off Actuators
VB-UNIC10-15-24AC	49Nm, 24Vac Actuator
VB-UNIC10-15-24DC	49Nm, 24Vdc
VB-UNIC10-15-230	49Nm, 230Vac
VB-UNIC10-30-24AC	98Nm, 24Vac Actuator
VB-UNIC10-30-24DC	98Nm, 24Vdc
VB-UNIC10-30-230	98Nm, 230Vac
VB-UNIC20-24AC	196Nm, 24Vac Actuator
VB-UNIC20-24DC	196Nm, 24Vdc
VB-UNIC20-230	196Nm, 230Vac

Data sheets: VB-UNIC10.pdf · VB-UNIC20.pdf · VB-NUCOM10.pdf

Part code	*Description*
	Modulating Actuators
VB-NUCOM10NS-15-230	49Nm, 230Vac Actuator
VB-NUCOM10NS-30-230	98Nm, 230Vac
VB-NUCOM10NM-15-230	196Nm, 230Vac

Data sheets: VB-UNIC10.pdf · VB-UNIC20.pdf · VB-NUCOM10.pdf

VE-x Plug & Seat Valve Assemblies

Sontay's range of Plug & Seat valve assemblies are complete with actuators, linkage assembly and valve body. They are suitable for use in heating and chilled applications and with a static pressure rating suitable up to PN25 (screwed) and PN16 (flanged). An optional blanking plug is available to convert the universal 3-way valve body into a 2-way valve. Actuators are available for raise/lower (3-point) and 0-10Vdc modulating control. They also fitted with manual override and position indicators.

FEATURES

- Suitable for water or glycol mix
- Better than 50:1 turndown ratio
- Life time Warranty on valve castings
- 5 year Warranty on cartridges
- Maintenance free
- High and low Kvs of each size
- All metal movement, no plastic
- 3 year Warranty on actuators

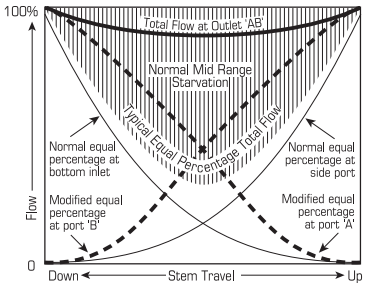
SPECIFICATION

Valves

Nominal pressure:	Screwed	PN25	Flanged	PN16
Characteristics:	eq% ends – linear centre			
Connections:	Screwed	BSPT	Flanged	DIN 80mm
Medium temperature:	0 to 130°C			
Materials:	Screwed bodies	Bronze		
	Flanged bodies	Cast iron		
	Packing	Multiple U-cup EPDM rings		
	Scrubbing rings	Viton		
	Stem	Mirror finish 303 Stainless steel		
	Disk	Bronze		
Leakage:	Class III 0.1% seat leakage			

Actuators

Power supply:	24Vac @ 50/60Hz	
Power consumption:	Raise/lower	2.3VA
	Modulating	3.3VA
Ambient:	Temperature	5 to 55°C
	Humidity	0 to 95% non-condensing
Protection:	IP54 (optional weatherproof cover)	
Weight:	49kg (valve, linkage & actuator) max.	



BENEFITS OF THE VE-X UNIVERSAL 2-WAY AND 3-WAY VALVE DESIGN.

Modified equal % linear flow characteristics allows for precise control in 2-way valves and no mid-range starvation in 3-way valves. These specially designed plug shapes incorporate the best features of equal percentage and linear characterisation to provide a valve excellent for modulating well at low flow, while adapting to provide linear characterization in the later stages of valve opening. This feature, along with the variable ratio linkage kit, provides better mixing yet no mid-range starvation, (common with most 3-way equal percentage valves). This allows for improved throttling action in 2-way duty.

Part code	*Description*
	Accessories
VE-P1	25mm plug to convert to 2-way valve
VE-P2	40mm plug to convert to 2-way valve
VE-P3	50mm plug to convert to 2-way valve
VE-P4	80mm plug to convert to 2-way valve
VE-PC-1	Weatherproof cover
VE-PC-2	Weatherproof cover, for 80mm, 95 Kvs valves only

Data sheet: VE-x.pdf

Part code	*Description*	*Close off, bar*	*Fitting*
	3-Port, Plug & Seat Valve Assemblies		
VE-25-5-I	25mm, 5 Kvs Valve	6.8	Screwed
VE-25-9-I	25mm, 9.2 Kvs Valve	6.8	Screwed
VE-40-13-I	40mm, 13.3 Kvs Valve	4.6	Screwed
VE-40-20-I	40mm, 20 Kvs Valve	4.6	Screwed
VE-50-29-I	50mm, 29.2 Kvs Valve	2.6	Screwed
VE-50-37-H	50mm, 37.5 Kvs Valve	1.7	Screwed
	Actuators to suit above valves (only)		
VE-5120	24V Raise/Lower, 5Nm Actuator		
VE-5320	24V Modulating, 5Nm Actuator		
VE-40-13-I	40mm, 13.3 Kvs Valve	6.8	Screwed
VE-40-20-I	40mm, 20 Kvs Valve	6.8	Screwed
VE-50-29-I	50mm, 29.2 Kvs Valve	4.7	Screwed
VE-50-37-H	50mm, 37.5 Kvs Valve	3	Screwed
VE-80-54-I	80mm, 54.2 Kvs Valve	2.04	Flanged
VE-80-62-H	80mm, 62.4 Kvs Valve	1.02	Flanged
	Actuators to suit above valves (only)		
VE-5130	24V Raise/Lower, 10Nm Actuator		
VE-5330	24V Modulating, 10Nm Actuator		
VE-50-29-I	50mm, 29.2 Kvs Valve	6.8	Screwed
VE-50-37-H	50mm, 37.5 Kvs Valve	4.76	Screwed
VE-80-54-I	80mm, 54.2 Kvs Valve	3.74	Flanged
VE-80-62-H	80mm, 62.4 Kvs Valve	2.04	Flanged
VE-80-95-K	80mm, 95 Kvs Valve	1.7	Flanged
	Actuators to suit above valves (only)		
VE-5140	24V Raise/Lower, 15Nm Actuator		
VE-5340	24V Modulating, 15Nm Actuator		
VE-80-54-I	80mm, 54.2 Kvs Valve	6.12	Flanged
VE-80-62-H	80mm, 62.4 Kvs "	3.74	Flanged
VE-80-95-K	80mm, 95 Kvs "	2.72	Flanged
	Actuators to suit above valves (only)		
VE-5140L	24V Raise/Lower, 20Nm Actuator		
VE-5340L	24V Modulating, 20Nm Actuator		
VE-80-62-Q	80mm, 62.4 Kvs Valve	7.8	Flanged
VE-80-95-Q	80mm, 95 Kvs Valve	4.42	Flanged
	Actuators to suit above valves (only)		
VE-5150	24V Raise/Lower, 35Nm Actuator		
VE-5350	24V Modulating, 35Nm Actuator		
	3-Port, Spring Return, Plug & Seat Valve Assemblies		
VE-25-5-I	25mm, 5 Kvs Valve	6.8	Screwed
VE-25-9-I	25mm, 9.2 Kvs Valve	6.8	Screwed
VE-40-13-I	40mm, 13.3 Kvs Valve	4.76	Screwed
VE-40-20-I	40mm, 20 Kvs Valve	4.76	Screwed
VE-50-29-I	50mm, 29.2 Kvs Valve	3.5	Screwed
VE-50-37-H	50mm, 37.5 Kvs Valve	2.38	Screwed
VE-80-54-I	80mm, 54.2 Kvs Valve	2.04	Flanged
	Actuators to suit above valves (only)		
VE-5630	24V Raise/Lower, 7Nm (spring-return)		
VE-5830	24V Modulating, 7Nm (spring-return)		
VE-40-13-I	40mm, 13.3 Kvs Valve	8.5	Screwed
VE-40-20-I	40mm, 20 Kvs Valve	8.5	Screwed
VE-50-29-I	50mm, 29.2 Kvs Valve	6.8	Screwed
VE-50-37-H	50mm, 37.5 Kvs Valve	5.44	Screwed
VE-80-54-I	80mm, 54.2 Kvs Valve	3.74	Flanged
VE-80-62-H	80mm, 62.4 Kvs Valve	2.72	Flanged
VE-80-95-K	80mm, 95 Kvs Valve	1.7	Flanged
	Actuators to suit above valves (only)		
VE-5640	24V Raise/Lower, 16Nm (spring-return)		
VE-5840	24V Modulating, 16Nm (spring-return)		
VE-80-54-Q	80mm, 54.2 Kvs Valve	6.8	Flanged
VE-80-62-Q	80mm, 62.4 Kvs "	6.8	Flanged
VE-80-95-K	80mm, 95 Kvs "	5.1	Flanged
	Actuator to suit above valves (only)		
VE-6060	24V Raise/Lower or Modulating, 40Nm (S/R)		

VR-F 3-port Flanged Iron Rotary Shoe Valves

These cast iron Rotary Shoe Valves are used in heating systems for mixing or diverting applications. Valves sizes from 50 to 150mm and PN6.

Note: These are not tight shut-off valves.

SPECIFICATION

Flow type:	Mixing or diverting	
Fluid temperature:	–10 to +110°C	
Rangeability:	100:1	
Max. pressure drop:	DN50	50kPa
	DN65 to DN150	30kPa
Materials:	Body & cover	Cast iron
	Spindle, slipper	Brass
	O-rings	EPDM
Pressure class:	PN6	
Required motor	50mm	5Nm
Torque:	65 to 100mm	10Nm
	125 to 150mm	15Nm
Weight:	37kg max.	

ACTUATOR SELECTION				
Non-Failsafe Actuators				
Valve Body	*24V R/L On/Off*	*230V R/L On/Off*	*24V Mod.*	*Linkage*
All VR-F	VA-DA1xE	VA-DA2xE	VA-DM1.1xE	VR-LK2

Failsafe Actuators				
Valve Body	*24V* On/Off	*230V* On/Off	*24V Mod.*	*Linkage*
All VR-F	VA-DA1.FxE	VA-DA2.FxE	VA-DM1.1FxE	VR-LK3

Part code	*Description*
	3-port, Flanged Valves
VR-F-P3-F50-K60	50mm, 60 Kvs Valve
VR-F-P3-F65-K90	65mm, 90 Kvs Valve
VR-F-P3-F80-K150	80mm, 150 Kvs Valve
VR-F-P3-F100-K225	100mm, 225 Kvs Valve
VR-F-P3-F125-K280	125mm, 280 Kvs Valve
VR-F-P3-F150-K400	150mm, 400 Kvs Valve
	Linkage Kits
VR-LK2	For VA Actuators from 8 to 32Nm
VR-LK3	For VA Failsafe Actuators

Data sheet: VR-F.pdf

Note: Please refer to page 62 for VA-D actuators

VR-G 3-port Screwed Brass Rotary Shoe Valves

These Brass Rotary Shoe Valves are made of a special brass alloy (DZR) allowing use in heating and cooling systems, for both mixing and diverting applications.

Valves are available from ½" to 2" sizes with internal threads.

Note: These are not tight shut-off valves.

FEATURES

- PN10
- DN15 to 50
- Internal threaded connections
- Compact size

SPECIFICATION

Valves only		
Flow type:	Mixing or diverting	
Fluid temperature:	–10 to +110°C	
Rangeability:	100:1	
Leak rate:	Mixing	<0.05% of flow
	Diverting	<0.02% of flow
Nominal pressure:	PN10	
Max. diff. pressure:	100kPa	
Materials:	Body	Brass DZR, CW 602N
	Shaft & bushing	PPS
	O-rings	EPDM
Weight:	2.05kg max. (valve only)	

ACTUATOR SELECTION				
Valve Body	*24V R/L On/Off*	*230V R/L On/Off*	*24V Mod.*	*Linkage*
All VR-G	VA-DAN1E	VA-DAN2E	VA-DMN1.1E	VR-G-LK

Part code	*Description*
	3-port, Screwed Valves
VR-G-01	½" BSP, 0.4 Kvs Valve
VR-G-02	½" BSP, 0.63 Kvs Valve
VR-G-03	½" BSP, 1.00 Kvs Valve
VR-G-04	½" BSP, 1.63 Kvs Valve
VR-G-05	½" BSP, 2.5 Kvs Valve
VR-G-06	½" BSP, 4.0 Kvs Valve
VR-G-07	¾" BSP, 2.5 Kvs Valve
VR-G-08	¾" BSP, 4.0 Kvs Valve
VR-G-09	¾" BSP, 6.3 Kvs Valve

Part code	*Description*
VR-G-10	1" BSP, 6.3 Kvs Valve
VR-G-11	1" BSP, 10 Kvs Valve
VR-G-12	1¼" BSP, 16 Kvs Valve
VR-G-13	1½" BSP, 25 Kvs Valve
VR-G-14	2" BSP, 40 Kvs Valve
	Linkage Kit
VR-G-LK	For VA 4Nm actuators

Data sheets: VR-G.pdf · VR-G-LK.pdf

Note: Please refer to page 62 for VA-D actuators

VT-xP Terminal Unit Valves

Sontay's range of terminal unit valves, are designed and provide a high quality long lasting solution for control of hot or chilled water applications with up to a 50% glycol mix. They are suitable for fan coil units, small re-heaters and re-coolers in temperature control systems. They have replaceable interchangeable cartridges that can be changed without removing the valve from the line. 2 & 3-Port valves are available with female or males threaded ports. They are used in combination with the VT-24, VT-SR (2, 3-port valves only) and VT-TA range of actuators.

FEATURES

- Suitable for water or glycolic water
- Better than 50:1 turndown ratio
- Soft sealing on plug gives complete shut-off
- Life time Warranty on valve castings
- 5 year Warranty on cartridges

SPECIFICATION

Nominal pressure:	PN25	
Connections:	2, 3-port VT-xPE	½" BSP or ¾" BSP female thread on all ports
	VT-2PI	½" BSP or ¾" BSP male thread on all ports
	VT-3PI	½" BSP male thread on all ports
	VT-4P	15mm Conex® or similar compression fitting kit (not supplied)
Stroke length:	2-port valves	4mm
	3-port valves	2.8mm
	4-port valves up to 2.60 Kvs	2.8mm
	4-port valve 3.00 Kvs	4mm
Medium temp:	0 to 120°C	
Glycol:	50% max.	
Materials:	Body	Low zinc bronze, alloy C84400
	Stem	Stainless steel
	Packing	Double EPDM
	Disc / plunger EPDM / brass	
Leakage:	100% tight shut-off	
Turndown ratio:	50:1	
Max. pressure:	3.5 bar	
Weight:	650g max.	

Part code	*Description*	*Characteristics*
	2-Port, External Threaded c/w Unions	
VT-2PE-15-01	15mm, 0.43 Kvs, Valve	Equal percentage
VT-2PE-15-02	15mm, 0.86 Kvs, Valve	"
VT-2PE-15-03	15mm, 1.30 Kvs, Valve	"
VT-2PE-15-04	15mm, 1.72 Kvs, Valve	"
VT-2PE-15-05	15mm, 2.15 Kvs, Valve	"
VT-2PE-15-06	15mm, 2.58 Kvs, Valve	"
VT-2PE-20-07	20mm, 2.58 Kvs, Valve	"
VT-2PE-20-08	20mm, 3.87 Kvs, Valve	Linear
	3-Port, External Threaded c/w Unions	
VT-3PE-15-02	15mm, 0.86 Kvs, Valve	Linear
VT-3PE-15-03	15mm, 1.72 Kvs, Valve	"
VT-3PE-15-04	15mm, 2.58 Kvs, Valve	"
VT-3PE-20-05	20mm, 3.10 Kvs, Valve	"
	2-Port, Internal Threaded	
VT-2PI-15-01	15mm, 0.43 Kvs, Valve	Equal percentage
VT-2PI-15-02	15mm, 0.86 Kvs, Valve	"
VT-2PI-15-03	15mm, 1.30 Kvs, Valve	"

Part code	*Description*	*Characteristics*
	2-Port, Internal Threaded	
VT-2PI-15-04	15mm, 1.72 Kvs, Valve	"
VT-2PI-15-05	15mm, 2.15 Kvs, Valve	"
VT-2PI-15-06	15mm, 2.58 Kvs, Valve	"
VT-2PI-20-07	20mm, 2.58 Kvs, Valve	"
VT-2PI-20-08	20mm, 3.87 Kvs, Valve	Linear
	3-Port, Internal Threaded	
VT-3PI-15-01	15mm, 0.86 Kvs, Valve	Linear
VT-3PI-15-02	15mm, 1.72 Kvs, Valve	"
VT-3PI-15-03	15mm, 2.58 Kvs, Valve	"
	4-Port, Compression Terminal Valves (diverting only)	
VT-4P-15-01	15mm, 0.86 Kvs, Valve	Linear
VT-4P-15-02	15mm, 1.70 Kvs, Valve	"
VT-4P-15-03	15mm, 2.60 Kvs, Valve	"
VT-4P-15-04	15mm, 3.00 Kvs, Valve	"

Data sheet: VT-xP.pdf

Note: 6.8 bar, high close-off 2-port valves are available on request. Please contact the Customer Services Team for more information.

VT-24 Terminal Unit Valve Actuators

The VT-24 range of actuators are for use with the VT-xP terminal unit valves. They have end of travel automatic shut-off for long life expectancy. On start-up the modulating version has an automatic calibration sequence during which the two ends of travel are programmed. The reversible, brushless, synchronous, electric motor maintains accurate positioning and provides creep-free control with extreme accuracy.

FEATURES

- Raise/lower (3-point) or modulating control types
- No tools required for mounting
- Hand override
- Life expectancy in excess of ½ million cycles
- Quite operation
- 3 year Warranty

SPECIFICATION

Power supply:	24Vac +10% –5%	
Power consumption:	45mA, 1VA	
Control type:	VT-24-RL	Raise/lower (3-point)
	VT-24-M	0-10Vdc Modulating
Frequency:	50/60Hz	
Stroke:	4.5mm	
Speed:	VT-24-RL	90 seconds @ 60Hz
	VT-24-RL	108 seconds @ 50Hz
	VT-24-M	120 seconds
Feedback:	1-5Vdc (VT-24-M only)	
Ambient:	Temperature	5 to 50°C
	Humidity	0 to 95% non-condensing
Protection:	IP51	
Weight:	240g	

Part code	*Description*
VT-24-RL	24V Raise/Lower Actuator
VT-24-M	24V Modulating

Data sheet: VT-24.pdf

VT-SR — Spring Return Terminal Unit Valve Actuators

These spring return actuators are designed for on/off control and are used with the 2 or 3-port VT-xP terminal unit valves. The VT-SR-xx-1 normally open series and the VT-SR-xx-2 normally closed series are 2-position, 2-wire fail safe on power disruption actuators.

FEATURES

- 24Vac and 230Vac supply options
- Normally closed and normally open versions
- Position indicator
- Maintenance free

SPECIFICATION

Power supply:	VT-ST-24-x	24Vac ±10%
	VT-ST-230-x	230Vac ±10%
Power consumption:	8VA, 0.3A @ 24Vac	
Control type:	On/off	
Stroke:	4.5mm	
Speed:	VT-SR-xx-1	20 sec. closing, 10 sec. opening
	VT-SR-xx-2	20 sec. opening,10 sec. closing
Ambient:	Temperature	5 to 50°C
	Humidity	0 to 95% non-condensing
Protection:	IP20	
Weight:	360g	

Part code	*Description*
VT-SR-24-1	24V On/Off Spring Return N/O Actuator
VT-SR-24-2	24V On/Off Spring Return N/C Actuator

Part code	*Description*
VT-SR-230-1	230V On/Off Spring Return N/O Actuator
VT-SR-230-2	230V On/Off Spring Return N/C Actuator

Data sheet: VT-SR.pdf

VT-TA — Thermic Terminal Unit Valve Actuators

Used with the VT-xP range of valves, they are tried and tested totally silent wax expansion principle actuators. The valve opens in direct proportion to the amount of wax melted, driving the stem through its travel to close (or open) the valve. They provide a very cost effective solution for valve control.

FEATURES

- 24Vac and 230Vac supply options
- No tools required for mounting
- Position indicator

SPECIFICATION

Power supply:	VT-TA-24	24Vac/dc ±10%
	VT-TA-230	230Vac ±10%
Control type:	VT-TA-xx-1 & 2	On/off
	VT-TA-24-M	0-10Vdc Modulating
Stroke:	4mm	
Speed:	VT-TA-xx-1 / 2	180 seconds approx.
Ambient:	Temperature	5 to 40°C
	Humidity	0 to 95% non-condensing
Protection:	IP54	
Weight:	140g	

Part code	*Description*
VT-TA-24-1	24V On/Off Thermic N/O Actuator
VT-TA-24-2	24V On/Off Thermic N/C Actuator
VT-TA-230-1	230V On/Off Thermic N/O Actuator

Part code	*Description*
VT-TA-230-2	230V On/Off Thermic N/C Actuator
VT-TA-24-M	24V Modulating Thermic N/C Actuator

Data sheet: VT-TA.pdf

VZ — Zone Valves and Actuators

This series of Zone Valves are designed for on/off control of fluid flow in a variety of heating and cooling applications, including AHUs and FCUs.

They feature a reliable synchronous motor and a spring return mechanism to provide power failsafe position and fitted with an auxiliary switch as standard.

SPECIFICATION

Operation:	2-port	Normally closed, spring return
	3-port	Mixing, spring return
Supply:	230Vac and 24Vac options	
Voltage tolerance:	±10%	
Max. electrical load:	Aux. switch 3A, 125 to 250Vac	
Power consumption:	6W	
Running time:	Open 10 seconds	Close 5 seconds
Working temp:	0 to 60°C	
Working humidity:	Non-condensing	
Housing:	Plate	Casting aluminium alloy
	Cover	Flame retardant ABS
Valve type:	2 or 3-port	
Fluid temp:	0 to 94°C	
Body rating:	2.5 MPa	
Material:	Valve body	Forged brass
	Valve rod	Stainless steel A151302
	Seal	NBR
Proction:	IP20	
Weight:	960g max.	

Part code	*Description*
	2-port Valves
VZ-2-15	½" BSP Zone Valve
VZ-2-20	¾" BSP Zone Valve
VZ-2-25	1" BSP Zone Valve
	3-port Valves
VZ-3-15	½" BSP Zone Valve
VZ-3-20	¾" BSP Zone Valve
VZ-3-25	1" BSP Zone Valve

Part code	*Description*
	Actuators
VZ-SM24	24Vac Actuator with auxiliary switch
VZ-SM230	230Vac Actuator with auxiliary switch

Data sheet: VZ.pdf

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VS-GCA Automatic Reset Gas Valves

This range of normally closed gas solenoid valve when powered on, the gas valve will open without manual intervention. On power loss the valve will automatically close. The valve can be fitted with an optional closed position indicator switch.

FEATURES

- Spring shut off action
- Automatic reset upon restart

SPECIFICATION

Power supply:	230Vac and 24Vac options	
Voltage tolerance:	–15 to +10%	
Connections:	GCA ..15 to 50	Female screwed
	GCA ..65 to 150	Flanged PN16
Closure time:	≤1 sec.	
Valve body:	Diecast aluminium	
Ambient temperature:	–15 to +60°C	
Coil temperature:	Approx. 70°C	
Approval:	EN 161, Class A, Group 2	
Protection:	IP54	
Weight:	60kg max.	

Part code	*Connection*
	Screwed Valves (24Vac)
VS-GCA-415	½" BSP Auto Reset Gas Valve
VS-GCA-420	¾" BSP
VS-GCA-425	1" BSP
VS-GCA-432	1¼" BSP
VS-GCA-440	1½" BSP
VS-GCA-450	2" BSP
	Screwed Valves (230Vac)
VS-GCA-815	½" BSP Auto Reset Gas Valve
VS-GCA-820	¾" BSP
VS-GCA-825	1" BSP
VS-GCA-832	1¼" BSP
VS-GCA-840	1½" BSP
VS-GCA-850	2" BSP

Part code	*Connection*
	Flanged Valves (230Vac)
VS-GCA-865	65mm Auto Reset Gas Valve
VS-GCA-880	80mm
VS-GCA-8100	100mm
VS-GCA-8125	125mm
VS-GCA-8150	150mm
	Accessories (Closed Position Indicator Switch) *
VS-FCA-1	To suit 15-20mm valves
VS-FCA-2	To suit 25mm valve
VS-FCA-3	To suit 32-40mm valves
VS-FCA-4	To suit 50mm valve
VS-FCA-5	To suit 65-80mm valves
VS-FCA-6	To suit 100mm valve
VS-FCA-7	To suit 125-150mm valves

* This option cannot be retro-fitted, it must be,ordered at the same time as the VS-GCA gas valve.

Data sheet: VS-GCA.pdf

VS-GCR Manual Reset Gas Valves

A range of Normally Closed Gas Valves, which shut off in the event of power failure. Typically used for emergency shut-off applications, unpon power failure the valve will close until power has been restored and the manual reset mechanism has been activated. Flanged valves can be fitted with an optional closed position indicator switch.

FEATURES

- Spring shut off action
- Manual reset upon restart

SPECIFICATION

Power supply:	230Vac and 24Vac options
Voltage tolerance:	–15 to +10%
Maximum pressure:	500 mbar
Connections:	GCR ..15 to 50 Female screwed
	GCR ..65 to 300 Flanged PN16
Closure time:	≤1 sec.
Valve body:	Diecast aluminium
Ambient temperature:	–20 to +60°C
Coil temperature:	Approx. 70°C
Cable entry:	PG11
Protection:	IP54
Weight:	103kg max.

Part code	*Connection*
	Screwed Valves (24Vac)
VS-GCR-415	½" BSP Manual Reset Gas Valve
VS-GCR-420	¾" BSP
VS-GCR-425	1" BSP
VS-GCR-432	1¼" BSP
VS-GCR-440	1½" BSP
VS-GCR-450	2" BSP
	Screwed Valves (230Vac)
VS-GCR-815	½" BSP Manual Reset Gas Valve
VS-GCR-820	¾" BSP
VS-GCR-825	1" BSP
VS-GCR-832	1¼" BSP
VS-GCR-840	1½" BSP
VS-GCR-850	2" BSP

Part code	*Connection*
	Flanged Valves (230Vac)
VS-GCR-865	65mm Manual Reset Gas Valve
VS-GCR-880	80mm
VS-GCR-8100	100mm
VS-GCR-8125	125mm
VS-GCR-8150	150mm
VS-GCR-8200	200mm
VS-GCR-8300	300mm
	Accessories (Flanged Vales only) Closed Position Indicator Switch *
VS-FCR-1	To suit 65-80mm valves
VS-FCR-2	To suit 100 to 150mm valves
VS-FCR-3	To suit 200mm valve
VS-FCR-4	To suit 300mm valve

* This option cannot be retro-fitted, it must be ordered at the same time as the VS-GCR gas valve.

Data sheet: VS-GCR.pdf

VS-PS — Gas Electro-hydraulic Valves

A range of Class 'A' 2-port, 2-position oil-filled Hydraulic Gas Valves for use in securing, limiting, shutting off and releasing gas supplies to atmospheric boilers, gas burners and similar equipment.

Units are fitted with a closed position switch as standard. A manual reset switch option is available.

Part code	*Description*
	Screwed Valves
VS-PS6683	1½" BSP Hydraulic Gas Valve c/w CPI
VS-PS6684	2" BSP Hydraulic Gas Valve c/w CPI
VS-PS6685	2½" BSP Hydraulic Gas Valve c/w CPI
VS-PS6686	3" BSP Hydraulic Gas Valve c/w CPI
	Flanged Valves
VS-PS6687F	4" BSP Hydraulic Gas Valve c/w CPI
VS-PS6689F	6" BSP Hydraulic Gas Valve c/w CPI

SPECIFICATION

Operating voltage:	240Vac +10% –15% @ 50/60Hz
Operating pressure:	200mbar max.
Closure time:	Max. 1 second
Body material:	Die cast aluminium
Media:	Non-corrosive gases – Air or oil
	(up to 200s Redwood No.1)
Pipework connections:	Up to 3" Screwed BSP female
	4" and over Flanged to PN16
Power consumption:	Opening 200VA
	Fully open 18VA
Switch rating:	250Vac or 30Vdc @ 5(2)A
Ambient temperature:	–15 to +60°C
Protection:	IP54
Weight:	60kg max.

Part code	*Description*
	Accessory
VS-PS-MRS	Manual reset switch

Data sheet: VS-PS.pdf

WD-CPS — Condensation Prevention Sensor

Sontay's new condensation prevention sensor has been designed to provide a switched output signal to prevent the onset of condensation on chilled surfaces such as chilled beams.

The detector measures the temperature compensated RH and surface temperature of the chilled surface and calculates the dew point temperature. This is compared to an adjustable setpoint to provide either a current output or VFC switched output.

FEATURES

- Reliable and accurate switching
- VFC or current output
- Quick and simple to install

SPECIFICATION

Output:	Current mode (dry <3mA, wet >12 mA)
	VFC mode SPDT contact, 240Vac @ 1A resistive
Supply voltage:	25Vdc ±5% or 24Vac ±10%
Cable:	Low smoke and fume
Dimensions:	70 x 48 x 30mm
Weight:	80g

Part code	*Description*
WD-CPS	Condensation Detector - 2m lead
WD-CPS-5M	Condensation Detector - 5m lead

Data sheet: WD-CPS.pdf

WD-AMX — Water Detection Alarm System

The WD-AMX range of Water Leak Detection Modules are designed for use with the WD-CS, WD-PS and WD-RS range of water leak detection sensors. They are suitable for DIN-rail mounting inside AHUs, power distribution units or general areas where leak detection is required. They are fitted as standard with LED indication of the water leak status, and sounder that can be disabled by simply removing a jumper. The WD-AMX relay output can either configured to be manual or auto reset. A relay output provides an alarm signal that can be used for connection to a BMS controller or remote alarm annunciation panel such as the UI-AA1-F (see page 60).

FEATURES

- AC detector excitation for reliability
- 24Vac/dc or 230Vac versions
- LED indication of leak status
- Manual or auto reset alarm output
- Audible alarm

SPECIFICATION

Supply:	WD-AMX-1 15 to 30Vac/dc ±10%
	WD-AMX-2 230Vac @ 50Hz
Supply current:	50mA max.
Output:	SPDT relay 12A @ 230Vac
Response time:	<1 sec. after exposure
Sensors:	WD-CS, WD-PS, WD-RS
Max. sensor cable length:	200 metres (with leader cable)
Audible alarm:	85dB @ 2.3 kHz at 10cms.
Ambient:	Temp. 0 to 40°C
	Humidity 0 to 80% RH non-condensing
Dimensions:	72 x 64 x 55mm
Weight:	WD-AMX-1 100g
	WD-AMX-2 240g

Part code	*Description*
WD-AMX-1	24Vac/dc Controller with buzzer
WD-AMX-2	230Vac Controller with buzzer

Data sheet: WD-AMX.pdf

WD-CS Water Leak Detection Cable

These Cable Sensors are typically used to detect water leaks under floors and are used in conjunction with a WD-AMX controller module. Optional fixing clips are available.

FEATURES

- Easy to lay
- Detects water along its entire length

SPECIFICATION

Material:	PVC twisted pair with stainless 316 elements
Dimension:	3.5mm dia.
Maximum cable run:	200m (including detection cable)
Weight:	520g max.
Controller:	WD-AMX module

Part code	*Description*
WD-CS-2M	Water Cable Sensor, 2m cable, 3m leader
WD-CS-5M	Water Cable Sensor, 5m cable, 3m leader
WD-CS-10M	Water Cable Sensor, 10m cable, 3m leader
WD-CS-15M	Water Cable Sensor, 15m cable, 3m leader
WD-CS-20M	Water Cable Sensor, 20m cable, 3m leader
WD-CS-25M	Water Cable Sensor, 25m cable, 3m leader
	Accessory
WD-FC	Pack of 20 fixing clips

Data sheet: WD-CS.pdf

Note: Customs lengths available.

WD-PS Water Leak Detection Point Sensor

This sensor is used to detect water at a localised point and is used in conjunction with a WD-AMX controller module.

FEATURES

- More than one can be connected to a WD-AMX
- Robust housing
- Slot lugs for easy installation

SPECIFICATION

Housing:	Material	ABS
	Dimensions	58 x 58 x 31mm
Probes:	Material	Stainless steel
	Dimensions	13 x 3mm dia.
Cable length:	2m	
Weight:	100g	
Controller:	WD-AMX module	

Part code	*Description*
WD-PS	Point Water Sensor, 2m cable

Data sheet: WD-PS.pdf

WD-RS Rain Detection Sensor

These sensors are used with a WD-AMX controller module to detect rain. The surface of the sensing head can be heated to avoid false detection alarms resulting from dew forming.

The sensor can be swivelled on its mounting bracket and locked in place by a wing-nut.

FEATURES

- Heater to avoid nuisance alarms
- Accurate switching

SPECIFICATION

Heater power supply:	24Vac/dc	
Cable length:	2 or 5m	
Housing:	Material	ABS
	Dimensions	70 x 30 x 45mm
Protection:	IP65	
Weight:	125g	
Controller:	WD-AMX module	

Part code	*Description*
WD-RS	Rain Sensor with internal heater, 2m cable
WD-RS-5M	Rain Sensor with internal heater, 5m cable

Data sheet: WD-RS.pdf

Thermistor Types and Compatibility Chart

Element Code	Element Type	Manufacturer	Room (TT-1000)	Outside (TT-531)	Duct (TT-522)	Immersion (TT-541)	Clamp (TT-551)	Bullet (TT-555)
A	10K3A1	Aquatrol	✓	✓	✓	✓	✓	✓
		Honeywell	T8120B	T7416A, T7043E	✓	T7106A, T7043F	T7044C	T7076D
		Johnson	✓	✓	TE-6361V TE-636GV-1	✓	✓	✓
		Satchwell	✓	DOT10K2 DOS10K2	DDT10K1	DWT10K1 DST10K1	✓	✓
		Seachange	SEN/PTR/ROM	SEN/PR/OAT	SEN/PR/DCT	SEN/PR/IMM	SEN/PR/CLP	SEN/FL
		Trend	TE-TS	TE-TO	TE-TD	TE-TI	TE-TC	✓
		Cylon	✓	✓	✓	✓	✓	✓
B	10K4A1	Andover	TTS-S Series	✓	TT-O Series	TT-I Series	TT-ST	✓
		Delta Controls	✓	✓	✓	✓	✓	✓
		Siebe	✓	✓	✓	✓	✓	✓
		York <40°C	✓	✓	✓	✓	✓	✓
C	20K6A1	Honeywell	T7460H, T7470A AF20, DRF20-S, RF20	AF20 DAF20 T7416A1022	LF20	VF20T, VF20NT VF20L, VF20LN WPF20 T7425A	VF20A WPF20A	KFT20, KFT20B DKF20
D	PT100A	Sauter	EGT430/F011	✓	EGT466/F011 EGT447/F011	✓	✓	EGT456/F011
		Serck	✓	✓	✓	✓	✓	✓
		Siemens/Landis & Staefa	QAA100 QAA2010	QAC2010	FK-TP/200 QAM2110	QAE2110		QAP2010
E	PT1000A	Honeywell	T7412	T7416A1014	T7411	T7413	T7414	
		Sauter	EGT430/F101	EGT401/F101	EGT446/F101 EGT446/F101		EGT411/F101	EGT456/F101
		Serck	✓	✓	✓	✓	✓	✓
		Siebe	TS-5811	✓	✓	✓	✓	✓
		Cylon	✓	✓	✓	✓	✓	✓
F	Ni1000A	Sauter	EGT330/F101	EGT301/F101	EGT346/F101 EGT347/F101 EGT348/F101	EGT346/F101 EGT347/F101 EGT348/F101	EGT311/F101	EGT354/F101 EGT356/F101
G	Ni1000A/TCR (LAN1)	Siemens/ Landis & Staefa	QAA24/25/26/27 QAA64	QAC22	QAM2120	QAE2120	QAD22 QAD26	QAP21, QAP22 QAZ21
H	SAT1	Satchwell	DRT, DU, DUS DUSF	DOT0002 DOS0002	DDT0001	DWT0001 DST0001	✓	DDU
K	STA1	Landis & Staefa	QAA2040 FR-T1	FW-T1	QAM2140 FK-T1	QAE2140 FT-T1	FA-T1 QAP2040 FTK-T1	✓
L	TAC1	TAC	✓	✓	✓	✓	✓	✓
M	2.2K3A1	Ambiflex	RTN3060	ETN3060	DTN3060	ITN3060	CTN3060	✓
		Johnson	TE-6344P	TE-6343P	TE-6341P TE-6341V TE-634GV-1	TE-6342P	✓	✓
N	3K3A1	Alerton	MS-1000 Series TS-1050	✓	✓	✓	✓	✓
P	30K6A1	Drayton	A701	A702	✓	A703	A704	✓
Q	50K6A1	Ambiflex						
R	100K6A1	York >40°C	✓	✓	✓	✓	✓	✓
S	SAT2	Satchwell	DR	✓	DD	DW1202 DWS1301	✓	✓
T	SAT3	Satchwell	✓	✓	✓	DW1204 DWS1202	✓	✓
V	SAT4	Satchwell	✓	DO2202	✓	✓	✓	✓
W	SIE1	Barber Colman	✓	✓	✓	✓	✓	✓
		Siebe	✓	✓	✓	✓	✓	✓
Y	STA2	Landis & Staefa	FR-T30	FO-T30	FK-T30	FT-T305	✓	✓
Z	10K	Carel	✓	✓	✓	✓	✓	✓
		Distech	✓	✓	✓	✓	✓	✓

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Thermistor Temperature Range

A - 10K3A1

Sensor type:
Thermistor, temp coef. negative

°C	Ω
–50	667828
–40	335671
–30	176683
–20	96974
–15	72895
–10	55298
–5	42314
0	32650
1	31030
2	29500
3	28054
4	26688
5	25396
6	24173
7	23016
8	21921
9	20885
10	19904
11	18974
12	18092
13	17257
14	16465
15	15714
16	15001
17	14325
18	13623
19	13053
20	12494
21	11943
22	11420
23	10923
24	10450
25	10000
26	9572
27	9165
28	8777
29	8408
30	8056
35	6530
40	5325
45	4367
50	3601
55	2985
60	2487
65	2082
70	1751
75	1480
80	1256
85	1070
90	916.1
95	787.0
100	678.6
105	587.3
110	510.1
115	444.5
120	388.6
125	340.8
130	300.0
140	234.1
150	184.8
160	–
170	–
180	–
190	–
200	–

B - 10K4A1

Sensor type:
Thermistor, temp coef. negative

°C	Ω
–50	441667
–40	239831
–30	135233
–20	78930
–15	61030
–10	47549
–5	37316
0	29490
1	28157
2	26891
3	25689
4	24547
5	23462
6	22430
7	21450
8	20517
9	19631
10	18787
11	17983
12	17219
13	16490
14	15797
15	15136
16	14507
17	13906
18	13334
19	12788
20	12268
21	11771
22	11297
23	10845
24	10413
25	10000
26	9606
27	9229
28	8869
29	8525
30	8197
35	6754
40	5594
45	4656
50	3893
55	3271
60	2760
65	2339
70	1990
75	1700
80	1458
85	1255
90	1084
95	939.6
100	817.2
105	713.0
110	624.1
115	547.9
120	482.5
125	426.0
130	377.2
140	298.1
150	238.0
160	–
170	–
180	–
190	–
200	–

C - 20K6A1

Sensor type:
Thermistor, temp coef. negative

°C	Ω
0	71120
1	67324
2	63749
3	60385
4	57218
5	54397
6	51429
7	48032
8	46258
9	43938
10	41719
11	39640
12	37676
13	36020
14	34067
15	32409
16	30841
17	29388
18	27954
19	26625
20	25387
21	24178
22	23047
23	21977
24	20962
25	20000
26	19085
27	18225
28	17404
29	16824
30	16384
31	16189
32	14491
33	13847
34	13235
35	12654
36	12010
37	11578
38	11076
39	10600
40	10148
41	9721.1
42	9314.5
43	8826.8
44	8557.5
45	8205.3
46	7899.3
47	7548.9
48	7243.1
49	6951.2
50	6672.6
51	6404.0
52	6148.9
53	5904.6
54	5671.4
55	5448.6
56	5235.7
57	5092.3
58	4837.8
59	4651.6
60	4473.9
61	–
62	–
63	–
64	–

D - PT100A

Sensor type:
Platinum, temp coef. positive

°C	Ω
–50	80.3
–40	84.3
–30	88.2
–20	92.2
–15	
–10	96.1
–5	
0	100.0
5	
10	103.9
15	
20	107.8
25	109.8
30	111.7
35	
40	115.5
45	
50	119.4
55	
60	123.2
65	
70	127.1
75	
80	130.9
85	
90	134.7
95	
100	138.5
105	
110	142.3
115	
120	146.1
125	
130	149.8
140	153.6
150	157.3
160	161.0
170	164.8
180	168.5
190	172.2
200	175.8
210	179.5
220	183.2
230	186.8
240	190.5
250	194.1
260	197.7
270	201.3
280	204.9
290	208.5
300	212.0
310	215.6
320	219.1
330	222.7
340	226.2
350	229.7
360	233.2
370	236.7
380	240.1
390	243.6
400	247.0
401	–
402	–
403	–

E - PT1000A

Sensor type:
Platinum, temp coef. positive

°C	Ω
–50	803
–40	843
–30	882
–20	921
–15	
–10	961
–5	
0	1000
5	
10	1039
15	
20	1078
25	
30	1117
35	
40	1155
45	
50	1194
55	
60	1232
65	
70	1271
75	
80	1309
85	
90	1347
95	
100	1385
105	
110	1423
115	
120	1461
125	
130	1498
140	1536
150	1573
160	1611
170	1648
180	1685
190	1722
200	1758
210	1795
220	1832
230	1868
240	1905
250	1941
260	1977
270	2013
280	2049
290	2085
300	2121
310	2156
320	2191
330	2227
340	2262
350	2297
360	2332
370	2367
380	2401
390	2436
400	2470
401	–
402	–
403	–

F - NI1000

Sensor type:
Platinum, temp coef. positive

°C	Ω
–50	743
–40	791
–30	842
–20	893
–15	
–10	946
–5	
0	1000
5	
10	1056
15	
20	1112
25	
30	1171
35	
40	1230
45	
50	1291
55	
60	1353
65	
70	1417
75	
80	1483
85	
90	1549
95	
100	1618
105	
110	1688
115	
120	1760
125	
130	1833
140	1909
150	1987
160	2066
170	2148
180	2232
190	–
200	–
201	–
202	–
203	–
204	–
205	–

Thermistor Temperature Range

G - LAN 1
(Ni1000A/TCR)
Sensor type:
Nickel, temp coef. positive

°C	Ω
–50	790.8
–40	826.8
–30	871.7
–20	913.4
–15	934.7
–10	956.2
–5	978.0
0	1000.0
1	1004.4
2	1008.9
3	1013.3
4	1017.8
5	1022.3
6	1026.7
7	1031.2
8	1035.8
9	1040.3
10	1044.8
11	1049.3
12	1053.9
13	1058.4
14	1063.0
15	1067.6
16	1072.2
17	1076.8
18	1081.4
19	1086.0
20	1090.7
21	1095.3
22	1100.0
23	1104.6
24	1109.3
25	1114.0
26	1120.0
27	1123.4
28	1128.1
29	1132.9
30	1137.6
35	1161.5
40	1185.7
45	1210.2
50	1235.0
55	1260.1
60	1285.4
65	1311.1
70	1337.1
75	1363.5
80	1390.1
85	1417.1
90	1444.4
95	1472.0
100	1500.0
105	1528.3
110	1557.0
115	1586.0
120	1625.4
125	–
130	–
135	–
140	–
150	–
170	–
180	–
190	–
200	–

H - SAT1
Sensor type:
Thermistor, temp coef. negative

°C	Ω
–50	9719
–40	9584
–30	9349
–20	8968
–15	8708
–10	8396
–5	8031
0	7614
1	7525
2	7434
3	7341
4	7246
5	7150
6	7053
7	6954
8	6853
9	6752
10	6649
11	6545
12	6440
13	6334
14	6228
15	6121
16	6013
17	5905
18	5786
19	5684
20	5580
21	5471
22	5362
23	5254
24	5147
25	5039
26	4933
27	4827
28	4721
29	4617
30	4513
35	4012
40	3545
45	3117
50	2730
55	2386
60	2082
65	1816
70	1585
75	1385
80	1213
85	1064
90	937
95	828
100	734
105	654
110	585
115	525
120	474
125	429
130	391
140	329
150	281
160	–
170	–
180	–
190	–
200	–

K - STA1
Sensor type:
Thermistor, temp coef. positive

°C	Ω
0	2226
1	2236
2	2246
3	2256
4	2266
5	2276
6	2286
7	2298
8	2306
9	2316
10	2326
11	2337
12	2347
13	2357
14	2367
15	2377
16	2388
17	2398
18	2408
19	2418
20	2429
21	2439
22	2449
23	2460
24	2470
25	2480
26	2491
27	2501
28	2512
29	2522
30	2532
31	2543
32	2553
33	2564
34	2574
35	2585
36	2596
37	2606
38	2617
39	2627
40	2638
41	–

L - TAC1
Sensor type:
Thermistor, temp coef. negative

°C	Ω
0	5085
5	4078
10	3294
15	2676
20	2188
25	1800
30	1488
35	1237
40	1034
50	740
60	540
70	400
80	300
90	230
100	180
110	–

M - 2.2K3A1
Sensor type:
Thermistor, temp coef. negative

°C	Ω
–50	150395
–40	75593
–30	39789
–20	21839
–15	16416
–10	12453
–5	9529
0	7353
1	6988
2	6643
3	6318
4	6010
5	5719
6	5444
7	5183
8	4937
9	4703
10	4482
11	4273
12	4075
13	3886
14	3708
15	3539
16	3378
17	3226
18	3081
19	2940
20	2814
21	2690
22	2572
23	2460
24	2353
25	2252
26	2156
27	2064
28	1977
29	1893
30	1814
35	1471
40	1199
45	983.4
50	810.9
55	672.2
60	560.1
65	468.9
70	394.5
75	333.3
80	282.9
85	241.1
90	206.3
95	177.2
100	152.8
105	132.3
110	114.9
115	100.1
120	87.51
125	76.75
130	67.52
140	52.72
150	41.61
160	–
170	–
180	–
190	–
200	–

N - 3K3A1
Sensor type:
Thermistor, temp coef. negative

°C	Ω
–50	200348
–40	100701
–30	53005
–20	29092
–15	21868
–10	16589
–5	12694
0	9795
1	9309
2	8850
3	8416
4	8006
5	7619
6	7252
7	6905
8	6577
9	6266
10	5971
11	5692
12	5428
13	5177
14	4940
15	4714
16	4500
17	4297
18	4105
19	3916
20	3748
21	3583
22	3426
23	3277
24	3135
25	3000
26	2871
27	2749
28	2633
29	2522
30	2417
35	1959
40	1598
45	1310
50	1080
55	895.5
60	746.2
65	624.7
70	525.5
75	444.0
80	376.9
85	321.2
90	274.8
95	236.1
100	203.6
105	176.2
110	153.0
115	133.3
120	116.6
125	102.2
130	89.95
140	70.23
150	55.44
160	–
170	–
180	–
190	–
200	–

P - 30K6A1
Sensor type:
Thermistor, temp coef. negative

°C	Ω
–50	2497K
–40	1219K
–30	622911
–20	331876
–15	245785
–10	183697
–5	138502
0	105305
1	99787
2	94588
3	89689
4	85069
5	60713
6	76604
7	72726
8	69064
9	65608
10	62347
11	59257
12	56346
13	53585
14	50978
15	48511
16	46178
17	43969
18	41877
19	39895
20	38019
21	36240
22	34554
23	32955
24	31438
25	30000
26	28635
27	27339
28	26108
29	24939
30	23828
35	19046
40	15317
45	12390
50	10079
55	8243
60	6777
65	5600
70	4650
75	3879
80	3251
85	2737
90	2313
95	1963
100	1672
105	1430
110	1228
115	1058
120	914.6
125	793.2
130	690.2
140	527.4
150	407.7
160	-
170	-
180	-
190	-
200	-

Thermistor Temperature Range

Q - 50K6A1

Sensor type:
Thermistor, temp coef. negative

°C	Ω
–50	4168K
–40	2033K
–30	1038K
–20	553243
–15	409689
–10	306183
–5	230842
0	175508
1	166310
2	157644
3	149480
4	141779
5	134521
6	127669
7	121207
8	115105
9	109344
10	103903
11	98761
12	93901
13	89307
14	84962
15	80851
16	76961
17	73280
18	69794
19	66492
20	63364
21	60400
22	57589
23	54925
24	52398
25	50000
26	47724
27	45564
28	43513
29	41565
30	39714
35	31744
40	25529
45	20650
50	16799
55	13740
60	11297
65	9334
70	7751
75	6466
80	5419
85	4560
90	3855
95	3271
100	2787
105	2384
110	2046
115	1762
120	1523
125	1321
130	1149
140	878.2
150	678.8
160	–
170	–
180	–
190	–
200	–

R - 100K6A1

Sensor type:
Thermistor, temp coef. negative

°C	Ω
–50	8337K
–40	4067K
–30	2077K
–20	1106K
–15	819378
–10	612366
–5	461683
0	351017
1	332619
2	315288
3	298959
4	283558
5	269041
6	255337
7	242414
8	230210
9	218688
10	207807
11	197521
12	187803
13	178613
14	169924
15	161702
16	153923
17	146560
18	139588
19	132984
20	126729
21	120799
22	115179
23	109850
24	104796
25	100000
26	95449
27	91128
28	87026
29	83129
30	79428
35	63489
40	51058
45	41301
50	33598
55	27479
60	22593
65	18669
70	15502
75	12932
80	10837
85	9121
90	7710
95	6543
100	5574
105	4767
110	4092
115	3525
120	3047
125	2642
130	2299
140	1756
150	1357
160	–
170	–
180	–
190	–
200	–

S - SAT2

Sensor type:
Thermistor, temp coef. negative

°C	Ω
–50	–
–40	–
–30	–
–20	–
–15	–
–10	–
–5	–
0	2094
1	2079
2	2061
3	2046
4	2027
5	2010
6	1992
7	1973
8	1951
9	1934
10	1911
11	1897
12	1872
13	1851
14	1810
15	1809
16	1787
17	1764
18	1740
19	1716
20	1690
21	1667
22	1644
23	1621
24	1598
25	1574
26	1549
27	1524
28	1500
29	1476
30	1452
35	1336
40	1219
45	1113
50	1011
55	–
60	–
65	–
70	–
75	–
80	–
85	–
90	–
95	–
100	–
105	–
110	–
115	–
120	–
125	–
130	–
140	–
150	–
160	–
170	–
180	–
190	–
200	–

T - SAT3

Sensor type:
Thermistor, temp coef. negative

°C	Ω
20	2708
21	2681
22	2659
23	2618
24	2616
25	2592
26	2567
27	2544
28	2520
29	2496
30	2474
31	2447
32	2423
33	2398
34	2372
35	2346
36	2322
37	2296
38	2269
39	2243
40	2216
45	2086
50	1950
55	1818
60	1694
65	1758
70	1461
75	1353
80	1258
85	1171
90	1089
95	1020
100	950

V - SAT4

Sensor type:
Thermistor, temp coef. negative

°C	Ω
–10	1733
–5	1617
0	1504
5	1397
10	1298
15	1208
20	1128

W - SEI1

Sensor type:
Thermistor, temp coef. negative

°C	Ω
–50	10732
–40	10517
–30	10172
–20	9654
–15	9320
–10	8933
–5	8496
0	8044
1	7910
2	7807
3	7702
4	7596
5	7489
6	7381
7	7271
8	7161
9	7050
10	6938
11	6825
12	6712
13	6598
14	6485
15	6370
16	6256
17	6141
18	6028
19	5913
20	5798
21	5686
22	5573
23	5461
24	5349
25	5238
26	5128
27	5019
28	4910
29	4803
30	4696
35	4185
40	3707
45	3271
50	2875
55	2521
60	2206
65	1929
70	1685
75	1472
80	1287
85	1127
90	986
95	866
100	760
105	670
110	590
115	522
120	462
125	410
130	365
140	290
150	233
160	–
170	–
180	–
190	–
200	–

Y - STA2

Sensor type:
Thermistor, temp coef. positive

°C	Ω
0	7490
5	6340
10	5360
15	4540
20	3840
25	3250
30	2750
35	2320

Z - 10K NTC

Sensor type:
Thermistor, temp coef. negative

°C	Ω
–10	42218
–5	33784
0	27197
5	22023
10	17933
15	14684
20	12087
25	10000
30	8315
35	6947
40	5831
45	4916
50	4163
55	3540
60	3023
65	2591
70	2230
75	1926
80	1669
85	1451
90	1266
95	1109
100	973

General Information

Your Sontay Account

Setting up an account:

- Complete and return an account application form to apply for credit facilities
- Pay for your order up front by bank transfer or credit-debit card on a proforma account

Placing orders:

Phone	**+44 1732 861200**
Fax	**+44 1732 861201**
Email	**sales@sontay.com**
Website	**www.sontay.com**

Mail
Sontay Ltd.
Four Elms Road · Edenbridge
TN8 6AB · UK

Setting up an account:

Companies wishing to purchase on credit account should complete and return the 'Application for credit account' form included in this catalogue or on our website at www.sontay.com. Please note that references will not be accepted from companies that are immediate competitors of Sontay.

Companies and individuals placing orders without an account will be invoiced on a proforma basis. Goods will not be despatched until the payment has cleared into our bank account, or for a faster response we are able to accept payment by Mastercard, Visa, and most types of debit/purchase cards.

Credit and payment terms:

All accounts will be subject to a trading credit limit. Accounts trading beyond these terms will be notified and asked to correct their account.
Our standard credit terms are nett monthly account unless agreed otherwise in writing.

Accounts not settled within their terms will be notified and placed on stop. Accounts trading beyond agreed credit terms may invalidate their product warranty. (See warranty section).

Sontay reserve the right to charge interest on overdue balances.
Sontay reserve the right to withdraw credit facilities should payment performance be outside of agreed terms.

Please note that we are no longer able to accept payment by cheque.
Non proforma credit and debit card payments will be subject to a 5% handling fee to cover bank charges.

Minimum order values:

In order that we may maintain our competitive pricing it is necessary for us to insist on minimum order values per shipment as follows:

UK and Republic of Ireland:	£30
International:	£50

Orders supported by a bank Letter of Credit will only be accepted if over £5,000 in value. In each case, an administration charge of 5% minimum will be applied to cover set-up of payment arrangements and any bank charges will be recovered at cost.

Discount structure:

Customers may be allocated sales discounts, any discount given will be determined and reviewed on the basis of actual turnover. Standard discounts only apply to the specific products in this catalogue, special products and custom variants are excluded and are net priced. Your company discount entitlement can be confirmed at any time by calling Customer Services.

Custom products:

Sontay is always willing to discuss OEM manufacturing and special build contracts. Please contact customer services or your account manager for more information.

Placing orders:

Orders can be placed by phone, fax, mail, e-mail or by our website.

The following information is required:

- Order number
- Invoice address
- Delivery address
- Delivery date required
- Part shipment acceptance (Y/N)
- Customer contact
- Items detailed with Sontay part numbers

Delivery periods:

Many items are available for immediate delivery. In all cases where delivery is critical consult the Customer Service Team who will try to fulfil your needs.

Warranty:

All products purchased after the 1st January 2012 and paid for in full compliance with Sontay's Terms and Conditions of Sale are covered by a 3 year warranty from the date the goods were despatched. The product warranty is void if the bar code label attached to the product has been removed or tampered with in any way. VT and VE valve castings now have lifetime warranty.

CE marking:

Compliance to the essential requirements of relevant EC Directives and British Standards is detailed on the datasheet for each product, and products are CE marked where appropriate. All data sheets are provided on our website and CD-ROM, copies of which can be obtained from the Customer Service Team.

WEEE and RoHS Directive Compliance:

Waste Electrical and Electronic Equipment (WEEE) Directive The WEEE Directive requires producers to pay for electronic and electrical equipment recycling and it covers a broad range of electronic and electrical products. The WEEE Directive aims to divert waste electronics from going into landfills and to encourage eco-design, reuse and recycling through producer responsibility. The WEEE Directive applies to standalone products. These are products that can function entirely on their own and are not part of another system or piece of equipment. Sontay do not supply any products that fit into this category.

General Information

Terms and Conditions of Sale

RESTRICTION OF HAZARDOUS SUBSTANCES (ROHS) DIRECTIVE

A sister directive to WEEE, the RoHS Directive bans the presence of specified hazardous substances in certain electronic and electrical equipment placed on the EU market after 1st July 2006. The RoHS Directive ensures that any such new electronic and electrical equipment does not contain Lead, Mercury, Cadmium, Hexavalent Chromium, Polybrominated Biphenyls (PBB) and Polybrominated Diphenyl Ethers (PBDE) that are often used as flame retardants in some plastics, unless derogation is provided for via an exemption. It should be noted that not all products that Sontay supply are subject to the RoHS Directive. For those that are subject to the Directive we are fully compliant.

PROGRESSING AN ORDER:

To progress an order, please call our Customer Service Team and provide the following information:

- Your company name
- Your purchase order number
- The Sontay sales order number as stated on the order confirmation, if at all possible.

If the order has been dispatched but not received, then a 'Proof of Delivery' can be requested. It usually takes between 15 minutes and two hours to provide verbal delivery status or delivery time, location and signature, as applicable. A hard copy can be requested from the couriers, but can take some days to produce.

DELIVERY AND PACKAGING CHARGES:

The following prices are for shipping and packing of parcels up to 30Kg within the UK. Heavier parcels are priced individually on request.

Service (UK mainland only)	*Price*
Next Day (up to 30Kg)	£ 9.00
Before 12.00am (up to 20Kg)	£16.00
Before 10.30am (up to 20Kg)	£25.00

For prices on international and heavier items please contact the Customer Services Team. Should you choose to nominate you own freight forwarder a £25 handling charge will be applied to your account to cover our handling and admin.

CANCELLATION OF AN ORDER:

Sontay employ the latest lean manufacturing techniques and often manufacture and source products to suit customer's instructions. In the event of a cancelled order, the customer will be liable for any costs incurred by Sontay during the fulfilment of your order up to the point of cancellation. Please note we will only accept written cancellation of an order. You will receive a confirmation of cancellation from us advising that we have been able to cancel your order. We regret that we cannot accept cancellation of confirmed orders for any special products and custom variants.

CUSTOMER COLLECTION:

The office is open for collections from 09.00 and 17.00 hours.
Please call Customer Services to arrange a suitable collection time.

DELIVERY TERMS:

EXW - Ex Works: The buyer pays all transportation costs and also bears the risks for bringing the goods to their final destination.

This term requires that the buyer is responsible for all duties and taxes applicable when goods are shipped internationally.

Loss, shortfall or damage (UK only):
Dispatches will only be delivered if the destination address is attended and the receiver will sign for receipt of the goods.

Our carrier will make all reasonable attempt to deliver the package, it is the customer's responsibility to have a representative available to receive the package. Please allow a 30 minute leeway on delivery times.

If there is nobody available to receive the goods, the carrier will leave a calling card and return the delivery to their local depot. Simply call the number on the card to rearrange the delivery. Neither Sontay nor the carrier will advise further of any failure to deliver. Any loss, shortfall or damage discovered by the receiver/customer must be reported to Sontay within 7 days of despatch. Sontay will not accept any liability for claims made after this period and the customer will be liable to pay for the whole delivery.

LOSS, SHORTFALL OR DAMAGE (EXPORT):

All export orders are accepted terms, ex-works. Sontay accept no responsibility for either lost or damaged goods, we strongly advise customers to ensure that you have insurance in place to cover any such losses.

PRODUCT RETURNS:

Please refer to the relevant information below for our procedures and guidelines on our product returns process.
All goods that are to be returned to us must have a RGF number and documentation stating the reason for return, please contact the Customer Service Team to obtain your RGF number should you need to return goods. Any goods received without a valid RGF number or documented reason for return will not be processed and will be returned to the originator at their cost.

WARRANTY FAILURES:

All goods received and accepted will the correct documentation will undergo inspection to determine their condition, goods that are determined to have failed within the defined warranty period will be credited or replaced as requested.
Goods that are deemed by inspection and test to have been damaged by the user will be referred back to the customer for a decision on either return or disposal, after notification we will automatically return the goods to the originator after a period of 30 days without reply.
Should you require advance replacements to items being returned we will require you to place a new purchase order, then after inspection should any credit be due it will be placed against the original order.

PRODUCT EXCHANGE:

We offer to exchange products that have been ordered in error providing they are standard catalogue items, and have been returned within 60 days of purchase. These products will be inspected on return and if found to be in good condition for resale will be restocked for a 25% charge.
Should you require exchange of items in advance we will require you to place a new purchase order, then after inspection should any credit be due it will be placed against the original order less the 25% restock charge.
Please note that all customised "special products" and non-catalogue items are excluded from the product exchange programme.

General Information

Terms and Conditions of Sale

SONTAY, EASIER TO DO BUSINESS:

Sontay provide a range of services for customers to enable greater and easier access to key information and personnel.

CUSTOMER SERVICES

UK:	Tel: 01732 861200	Fax: 01732 861201
International:	Tel: +44 1732 861225	Fax: +44 1732 861226
Email:	sales@sontay.com	

TECHNICAL SUPPORT

UK:	Tel: 01732 861218	Fax: 01732 861219
International:	Tel: +44 1732 861218	Fax: +44 1732 861219
Email:	support@sontay.com	

ACCOUNTS

UK:	Tel: 01732 861202	Fax: 01732 861203
International:	Tel: +44 1732 861202	Fax: +44 1732 861203
Email:	accounts@sontay.com	
Website:	www.sontay.com	

You will find the latest news, information on any product updates as well access to all technical datasheets for our range of catalogue products. Visit often as we are constantly evolving the site!

ISO9001:

Sontay Limited is committed to supplying products that meet or exceed our customers initial and continuing expectations of quality and service, and to this end we now have a Quality Management System that complies with the requirements of BS-EN ISO9001:2008, the scope of which covers: 'The design, manufacture, sourcing and supply of electronic and electromechanical temperature and relative humidity sensors and their associated peripheral items.' A copy of the certificate of registration is available.

FM 53732
BS-EN ISO9001: 2008

DEFINITIONS:

(a) "Goods" means the Goods or services which the Company is to supply in accordance with these terms.
(b) "Company" means Sontay Ltd.
(c) "Terms and Conditions" means the terms and conditions of sale set out below and the Company's "Your Sontay Account" document and any specific terms and/or conditions agreed in writing between the Customer and the Company. In the event of conflict, the terms in this document shall take precedence.
(d) "Contract" means the Contract for the purchase and sale of Goods.
(e) "Writing" includes communication by post, facsimile, e-mail and by personal delivery of documents.
(f) "Acceptance" means confirmation in writing by the Company upon receipt of the Customer's order.
(g) "Customer" means the person, firm or company described overleaf and who purchases the Goods or Service from the Company.

1. APPLICATION

(a) Unless otherwise specifically agreed in writing these Conditions shall be incorporated in every offer quotation acceptance and contract for the sale or supply of goods or services by the Company and together with the order to which they relate constitute the entire contract between the Company and the Customer. Any conditions proposed by the Customer which are inconsistent with these terms are hereby excluded (including any terms or conditions which the Customer purports to apply under purchase order, confirmation of order, specification or other document).
(b) These conditions apply to all the Company's sales and any variation to these conditions and any representation about the Goods or services shall have no effect unless expressly agreed in writing by a director of the Company. The Customer acknowledges that it has not relied on any statement, promise or representation made or given by or on behalf of the Company which is not set out in the Contract. Nothing in this condition shall exclude or limit the Company's liability for fraudulent misrepresentation.
(c) The Customer shall ensure that the terms of its order and any applicable specification are complete and accurate.

2. ACCEPTANCE

(a) All quotations are given subject to confirmation in writing by the Company upon receipt of the Customer's order and no contract shall be concluded until such confirmation is given or the Customer's order is otherwise accepted. Unless otherwise stated in writing by the Company each order when accepted constitutes a separate contract.
(b) The quality and description of the Goods shall be as set out in the Company's quotation or acknowledgement of order.
(c) All samples, drawings, descriptive matter, specifications and advertising issued by the Company and any descriptions or illustrations contained in the Company's catalogues or brochures are issued or published for the sole purpose of giving an approximate idea of the Goods described in them. They shall not form part of the Contract and this is not a sale by sample.

3. PRICES

(a) Prices quoted are exclusive of VAT (unless otherwise stated) and are those in force at the date of quotation. Unless otherwise stated in the quotation (if any) given by the Company they may be varied at any time before delivery of the Goods or before performance of the Services provided the prices may be varied after a contract has become binding only by reason of an increase in the cost of the Company of raw materials or labour or by reason of a fluctuation in exchange rates.
(b) If prices are varied after a contract has become binding the Company shall give the Customer written notice of such variation and on receipt of such notice the Customer may cancel his order. In a case where goods are to be delivered or services are to be supplied in instalments the Customer may cancel payments only for the undelivered goods or the unperformed part of the Services. If the order is not cancelled the Customer shall be bound to pay the increased or varied price in respect of the goods delivered or Services performed after such notice is received. To be effective cancellations must be in writing and must be received by the Company either within fourteen days of the date in which such notice was sent or at least twenty-eight days before delivery or performance is due, whichever is the sooner.
(c) Unless otherwise expressly agreed prices quoted are ex works and exclude all cost of packaging and delivery from the Company's premises but these may be charged as extras.
(d) Any variation or amendment requested by the Customer will only be valid and binding on the Company when subject to a change order relating to the order duly placed upon and accepted by the Company in writing and signed by a duly authorised representative, and subject to appropriate adjustment in price, delivery dates and other matters.
(e) Unless otherwise expressly agreed in the case of export sales, prices quoted also exclude all overseas taxes and tariffs and all costs of delivery which will be the responsibility of the Customer.

General Information

Terms and Conditions of Sale

4. DELIVERY

(a) Delivery or periods are only best estimates and the Company is not liable for the consequences of any delay. Accordingly, time shall not be of the essence in making deliveries.
(b) Unless otherwise agreed in writing by the Company, delivery of the Goods shall take place at the Company's place of business.
(c) Any delivery or performance period begins on the date of the Company acceptance of the Customer's order or (if later) when the Company receives from the Customer any further information which it may require to proceed with the contract. The Customer agrees to supply such information promptly and to accept the Goods within the delivery or performance schedule or timetable specified in the contract and to give any necessary instructions for delivery or performance accordingly.
(d) Where the Company has agreed to deliver the Goods, the Customer shall in all cases other than export sales provide the labour necessary to the Company to unload and stack free of charge to the Company and shall ensure that the delivery vehicle is unloaded within a reasonable time and shall indemnify the Company against any loss or damage arising during unloading.
(e) If for any reason the Customer fails to accept delivery of any of the Goods when they are ready for delivery, or the Company is unable to deliver the Goods on time because the Customer has not provided appropriate instructions, documents, licences or authorisations:
(i) risk in the Goods shall pass to the Customer (including for loss or damage caused by the Company's negligence);
(ii) the Goods shall be deemed to have been delivered; and the Company may store the Goods until delivery, whereupon the Customer shall be liable for all related costs and expenses (including, without limitation, storage and insurance).
(f) If the Company delivers to the Customer a quantity of Goods of up to 5% more or less than the quantity accepted by the Company, the Customer shall not be entitled to object to or reject the Goods or any of them by reason of the surplus or shortfall and shall pay for such goods at the pro rata Contract rate.
(g) Any typographical, clerical error or other omission in documents issued by the Company shall be subject to correction by the Company without liability on the part of the Company.
(h) The Customer must examine the Goods immediately upon delivery and within 7 days thereafter notify the Company in writing of any defects, and return any allegedly defective part or parts of the Goods to the Company or as the Company shall direct at the Customer's expense within 18 days of delivery and pay to the Company the costs of any tests carried out to such part or parts (such cost to be certified by the Company) together with the costs of return thereof to the Company in the event that no liability attaches to the Company in respect of defects. Where damage occurs, not apparent on reasonable inspection, the Customer must notify the Company within 7 days within the discovery of any such damage. In default the Customer will be deemed to have examined and accepted the Goods.
(i) The Company shall not be liable for any loss or damage caused by or resulting from any variation (for whatever reason) in the specifications or technical data of any outside manufacturer or for any loss or damage arising out of curtailment or cessation of supply following such variation.
(j) The Company will repair or at its option replace free of charge any part of the Goods lost or damaged in transit provided that (if the Company appoints the carrier) the Company and the carrier are given written notice of such loss or damage within the time required by the carrier's Conditions of Carriage. Alternatively where delivery is made by the Company's own transport the Company should be given written notice within three days of the arrival of the Goods or in the case of non-delivery within fourteen days of despatch. This clause shall not apply to export sales.
(k) The quantity of any consignment of Goods as recorded by the Company on despatch from the Company's place of business shall be conclusive evidence of the quantity received by the Customer on delivery unless the Customer can provide conclusive evidence proving the contrary.

5. RISK / TITLE

(a) The Goods are at the risk of the Customer from the time of delivery.
(b) Ownership of the Goods shall not pass to the Customer until the Company has received in full (in cash or cleared funds) all sums due to it in respect of:
(i) the Goods; and
(ii) all other sums which are or which become due to the Company from the Customer on any account.
(c) Until ownership of the Goods has passed to the Customer, the Customer shall:
(i) hold the Goods on a fiduciary basis as the Company's bailee;
(ii) store the Goods (at no cost to the Company) separately from all other goods of the Customer or any third party in such a way that they remain readily identifiable as the Company's property;
(iii) not destroy, deface or obscure any identifying mark or packaging on or relating to the Goods; and
(iv) maintain the Goods in satisfactory condition and keep them insured on the Company's behalf for their full price against all risks to the reasonable satisfaction of the Company. On request the Customer shall produce the policy of insurance to the Company.
(d) The Customer may resell the Goods before ownership has passed to it solely on the following conditions:
(i) any sale shall be effected in the ordinary course of the customer's business at full market value; and
(ii) any such sale shall be a sale of the Company's property on the Customer's own behalf and the Customer shall deal as principal when making such a sale.
(e) The Customer's right to possession of the Goods shall terminate immediately if:
(i) the Customer has a bankruptcy order made against him or makes an arrangement or composition with his creditors, or otherwise takes the benefit of any statutory provision for the time being in force for the relief of insolvent debtors, or (being a body corporate) convenes a meeting of creditors (whether formal or informal), or enters into liquidation (whether voluntary or compulsory) except a solvent voluntary liquidation for the purpose only of reconstruction or amalgamation, or has a receiver and/or manager, administrator or administrative receiver appointed of its undertaking or any part thereof, or documents are filed with the court for the appointment of an administrator of the Customer or notice of intention to appoint an administrator is given by the Customer or its directors or by a qualifying floating charge holder (as defined in paragraph 14 of Schedule B1 to the Insolvency Act 1986), or a resolution is passed or a petition presented to any court for the winding-up of the Customer or for the granting of an administration order in respect of the Customer, or any proceedings are commenced relating to the insolvency or possible insolvency of the Customer; or
(ii) the Customer suffers or allows any execution, whether legal or equitable, to be levied on his/its property or obtained against him/it, or fails to observe or perform any of his/its obligations under the Contract or any other contract between the Company and the Customer, or is unable to pay its debts within the meaning of section 123 of the Insolvency Act 1986 or the Customer ceases to trade; or
(iii) the Customer encumbers or in any way charges any of the Goods.
(f) The Company shall be entitled to recover payment for the Goods not withstanding that ownership of any of the Goods has not passed from the Company.

General Information

Terms and Conditions of Sale

(g) The Customer grants the Company, its agents and employees an irrevocable licence at any time to enter any premises where the Goods are or may be stored in order to inspect them, or, where the Customer's right to possession has terminated, to recover them.
(h) Where the Company is unable to determine whether any Goods are the goods in respect of which the Customer's right to possession has terminated, the Customer shall be deemed to have sold all goods of the kind sold by the Company to the Customer in the order in which they were invoiced to the Customer.
(i) On termination of the Contract, howsoever caused, the Company's (but not the Customer's) rights contained in this condition 5 shall remain in effect.

6. LAW

The validity construction and performance of any contract to which these conditions apply shall be governed by the law of England and any disputes shall be submitted to the English Courts.

7. PAYMENT

(a) Subject to the establishment of an approved credit account, payment by the Customer is due within 30 (thirty) days of the date of the invoice.
(b) If the Customer fails to pay the Company by the due date the Company may either suspend all further deliveries or performance of Services until payment is made in full or cancel the order and subsequent ordered insofar as goods remain to be delivered or Services remain to be performed thereunder.
(c) The Company reserves the right to charge interest when payment has not been made on the due date at the rate (both before and after judgement) or two per cent above Bank Of Scotland base rate for the time being calculated on the outstanding balance from the due date for payment down to receipt by the Company of payment.
(d) Any sums paid by deposit, retainer or prepayment are not refundable in the event of a Customer cancelling an order. The Company reserves the right at any time and it's discretion to demand security for payment before continuing with or delivering any order.
(e) Payment of the price for the Goods is due in pounds sterling.
(f) No payment shall be deemed to have been received until the Company has received cleared funds.
(g) All payments payable to the Company under the Contract shall become due immediately on its termination despite any other provision.
(h) The Customer shall make all payments due under the Contract in full without any deduction whether by way of set-off, counterclaim, discount, abatement or otherwise unless the Customer has a valid court order requiring an amount equal to such deduction to be paid by the Company to the Customer.

8. GUARANTEE OF QUALITY

(a) The Company shall have the right, whether before or after the date of the order, to alter the specification of the Goods or any part thereof provided that such alterations shall not adversely affect the performance of the Goods.
(b) Where the Company is not the manufacturer of the Goods, the Company shall endeavour to transfer to the Customer the benefit of any warranty or guarantee given to the Company.
(c) The Company warrants that (subject to the other provisions of these conditions) on delivery, and for a period of 36 months from the date of delivery, the Goods shall be of satisfactory quality within the meaning of the Sale of Goods Act 1979.
(d) The Company shall not be liable for a breach of the warranty in condition 8 (c) unless the Company is given a reasonable opportunity after receiving the notice of examining such Goods and the Customer (if asked to do so by the Company) returns such Goods to the Company's place of business at the customers cost for the examination to take place there.
(e) The Company shall not be liable for a breach of the warranty in condition 8 (c) if:
(i) the Customer makes any further use of such Goods after giving such notice; or
(ii) the defect arises because the Customer failed to follow the Company's oral or written instructions as to the storage, installation, commissioning, use or maintenance of the Goods or (if there are none) good trade practice; or
(iii) the Customer alters or repairs such Goods without the written consent of the Company.
(f) Subject to condition 8 (d) and condition 8 (e), if any of the Goods do not conform with the warranty in condition 8 (c) the Company shall at its option repair or replace such Goods (or the defective part) or refund the price of such Goods at the pro rata Contract rate provided that, if the Company so requests, the Customer shall, at the Company's expense, return the Goods or the part of such Goods which is defective to the Company.
(g) If the Company complies with condition 8 (f) it shall have no further liability for a breach of the warranty in condition 8(c) in respect of such Goods.

9. USE OF THE GOODS

Where the Goods are plant for use or operation at work (or are components for such plant) it is the Customer's responsibility to ensure that proper standards of safety are maintained in using the Goods and (without limitations) to pass on all instructions regarding such use to personnel and to arrange for their training in such use where appropriate. This obligation shall extend to taking all reasonable steps to ensure compliance with the Health and Safety at Work etc. Act 1974 in the event of sale on or other supply by the Customer.

10. INTELLECTUAL PROPERTY

(a) The Company will indemnify the Customer against any claim for infringement of Letters Patent Registered Design Trade Mark or Copyright ("Intellectual Property Rights") by the use or sale of any of the Goods against all costs and damages which the Customer may incur in any action for such infringement or for which the Customer may become liable in any such action. Provided always that this indemnity shall not apply to any infringement which is due to the Company having followed any instructions furnished or given by the Customer or to the use of such Goods in a manner or for a purpose or in a foreign country not specified by or disclosed to the Company or to any infringement which is due to the use of the Goods in association or combination with any other goods not supplied by the Company. And provided also that this indemnity is conditional upon the Customer giving to the Company notice within 7 days in writing of any claim being made or action threatened or brought against the Customer and on the Customer permitting the Company at the Company's own expense to conduct any litigation that may ensue and all negotiations of the claim. The Customer warrants that any instruction furnished or given by it shall not be such as will cause the Company to infringe any intellectual Property Rights.
(b) The Customer shall indemnify the Company for any loss damage expense or liability in any suit or proceeding based upon any claim for the infringement of Intellectual Property Rights brought against the Company resulting from the Company's compliance with the Customer's designs or specifications and for any such infringement involving any marking or branding applied by the Company at the request of the Customer.

General Information

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11.LIABILITY

(a) Subject to conditions, the following provisions set out the entire financial liability of the Company (including any liability for the acts or omissions of its employees, agents and sub-contractors) to the Customer in respect of:
(i) any breach of these conditions;
(ii) any use made or resale by the Customer of any of the Goods, or of any product incorporating any of the Goods; and
(iii) any representation, statement or tortious act or omission including negligence arising under or in connection with the Contract.

(b) All warranties, conditions and other terms implied by statute or common law (save for the conditions implied by section 12 of the Sale of Goods Act 1979) are, to the fullest extent permitted by law, excluded from the Contract.

(c) Nothing in these conditions excludes or limits the liability of the Company:
(i) for death or personal injury caused by the Company's negligence; or
(ii) for any matter which it would be illegal for the Company to exclude or attempt to exclude its liability; or
(iii) for fraud or fraudulent misrepresentation.

(d) Subject to conditions 9(b) and 9(c)
(i) the Company's total liability in contract, tort (including negligence or breach of statutory duty), misrepresentation, restitution or otherwise, arising in connection with the performance or contemplated performance of the Contract shall be limited to the Contract price; and
(ii) the Company shall not be liable to the Customer for loss of profit, loss of business, or depletion of goodwill in each case whether direct, indirect or consequential, or any claims for consequential compensation whatsoever (howsoever caused) which arise out of or in connection with the Contract.

12. FORCE MAJEURE

(a) The Company shall not be liable to the Customer to the extend that fulfilment of its obligations to the Customer has been prevented hindered or delayed by force majeure as herein defined.

(b) For the purpose of this Condition force majeure shall mean any circumstance beyond the control of the Company and shall include (without limitation):
(i) Riot civil commotions war rebellion national or international emergency strikes lockouts or other labour disputes.
(ii) Destruction or damage due to natural cause floods fires explosions or breakdown of machinery.
(iii) Any order of a local national or international authority.
(iv) Shortage of labour equipment materials or supplies.
(v) Transportation embargoes of failure or delays in transport.

13. REGULATIONS

The Customer warrants that it has complied with every applicable lawful requirement or instruction and (without Limitation) that it has obtained every necessary licence permit or authority that may be required in connection with the supply of Goods and Services to be carried out hereunder.

14. DEFAULT INSOLVENCY

If the Customer shall commit a breach of any of its obligations to the Company under this or any other contract or if any distress or execution shall be levied upon the Customer's property or assets or if the Customer shall make or offer any arrangement or composition with creditors or commit any act of bankruptcy or if any petition or receiving order in bankruptcy shall be presented or made against him or (being a limited company) any resolution or petition for winding up shall be passed or presented (other than for the purpose of amalgamation or reconstruction) or if a receiver or administrator of its undertaking property or assets or any part thereof shall be appointed then the Company may without notice:
(a) suspend or determine the contract or any unfulfilled part thereof: and
(b) stop any goods in transit; and
(c) recover any Goods from the Customer's premises for which payment has not been made in full without prejudice to any other right or remedy which the Company may lawfully enforce or exercise. Any cost incurred by the Company during the process of recovering Goods from the Customer's premises for which payment has not been made in full, would be regarded as the debt of the Customer to the Company.

15. GENERAL

(a) The Customer shall not assign its interest in the Agreement without the written consent of the Company.

(b) Each right or remedy of the Company under the Contract is without prejudice to any other right or remedy of the Company whether under the Contract or not.

(c) If any provision of the Contract is found by any court, tribunal or administrative body of competent jurisdiction to be wholly or partly illegal, invalid, void, voidable, unenforceable or unreasonable it shall to the extent of such illegality, invalidity, voidness, voidability, unenforceability or unreasonableness be deemed severable and the remaining provisions of the Contract and the remainder of such provision shall continue in full force and effect.

(d) Failure or delay by the Company in enforcing or partially enforcing any provision of the Contract shall not be construed as a waiver of any of its rights under the Contract.

(e) Any waiver by the Company of any breach of, or any default under, any provision of the Contract by the Customer shall not be deemed a waiver of any subsequent breach or default and shall in no way affect the other terms of the Contract.

(f) The parties to the Contract do not intend that any term of the Contract shall be enforceable by virtue of the Contracts (Rights of Third Parties) Act 1999 by any person that is not a party to it.

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HEAD OFFICE

Sontay Limited · Four Elms Road · Edenbridge · Kent · TN8 6AB · England

UK Telephone	International Telephone	Email
01732 861200	+44 (0)1732 861225	sales@sontay.com
Fax	**Fax**	**Website**
01732 861201	+44 (0)1732 861226	www.sontay.com

Sontay Account Application Form

Please complete this form, scan and email to Sontay or photocopy and fax.

Email: sales@sontay.com · Fax: UK +44 (0)1732 861201 · International: +44 1732 861226

What type of business are you? *(Please tick the box which best describes your company)*			
☐ Distributor	☐ Original Equipment Manufacturer	☐ Panel Manufacturer	☐ End user
☐ Controls Manufacturer	☐ Contractor	☐ Systems Integrator	Other:
How did you find out about us? *(Please select the company type which applies to you)*			
☐ Website	☐ Website	☐ Advertisements	☐ Word of Mouth
☐ Sales Visit	☐ Telesales	☐ Referal	Other:
Please select the company type which applies to you.			
☐ Limited Company	☐ Sole Trader	☐ Partnership	☐ Public Limited Company
Non Limited Companies: If you have been at your current address for less than three years please provide previous.			
Partnership's: Must provide trading names, all partners full names, addresses, date of birth and signatures. *(Please provide this information on a separate sheet)*			

Full Company Name			
Company Registration No.		**VAT No.** *(if applicable)*	
Registered Office Address			
Post Code		**Country**	
Telephone No.		**Fax No.**	
Main Contact Name *(Mr / Mrs / Miss / Other)*			
Position		**Email**	
Telephone No.		**Fax No.**	
Invoice Address *(if different from above)*			
Post Code		**Country**	
Telephone No.		**Fax No.**	
Preferred Invoice Currency	☐ GBP ☐ Euro ☐ US Dollar		
Bank Name			
Sort Code		**Account No.**	
Account Name			
Swift Code		**IBAN Code**	

Sontay Limited will make a search with a credit reference agency, who will keep a record of that search and may share that information with other business. Sontay Limited may also make enquiries about the principle directors with a credit reference agency. Sontay Limited reserve the right to change payment profile as it sees fit without explanation. Sontay Limited may also use your details to let you know about other products and services that they think would be of interest to you. By signing this agreement I/we agree with Sontay's Terms & Conditions of Sale (please refer to pages 77-80)

Acceptance Signature	Print Name
Date	Authorised Signatory Position in Company

Sontay Order Form

Please photocopy, complete and return / fax this form.

Email: sales@sontay.com · Fax: UK +44 (0)1732 861201 · International: +44 1732 861226

Account No. *(if known)*		**Date**	
Company Name			
Contact Name			
Address		**Delivery Address** *(if different)*	
Email		**For the attention of**	
Telephone No.		**Fax No.**	
Purchase Order Number:		**Currency**	☐ GBP ☐ Euro ☐ US Dollar

Delivery *(please tick relevant box)*	☐ Next Day (up to 30Kg)	☐ Before 10.30am (up to 20Kg)	☐ Before 12.00am (up to 20Kg)
Do you want to order part shipped if the complete order is not in stock?		☐ Yes ☐ No	

Special Requirements

Date	Acceptance Signature

Product Name Listing

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